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THE SOCIETY FOR THE ADVANCEMENT OF MANAGEMENT

JOURNAL OF MANAGEMENT

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Personnel Relations in Hotel Management

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A Note on Executive Planning

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The Manager and the Employe in Consumer Co-operative Organizations

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JULY, 1937 VOL. II, No. 4

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Comment

AN ASTONISHING characteristic of the management mood today is the widespread prevalence of fear. The fear is in part unfocused—concerned with general uncertainty regarding future governmental policy as to business regulation and with the genuineness and permanence of recovery.

But more especially it arises with respect to the labor relations of management. Many managers feel at sea about their employe problems. They distrust unionism; they are puzzled about the obligations imposed by the Wagner Act. They are fearful that whatever they do will be wrong. In some cases they may even secretly admit that they have been too domineering.

Now fear is a familiar psychological condition. It is said to have biological value under certain restricted conditions. It is also known to have little value under conditions where constructive thought, creative imagination and courageous innovation and action are required. Fear arises from ignorance. It arises from impotence. It arises in some instances from ill-will. And it arises on occasion from a bad conscience—from a guilty feeling. It is a negative and an inhibiting emotion. For it focuses attention on the feared thing and not on corrective measures.

The antidote to it is a positive desire which is so appealing that it forces the fear feeling out of existence. The corrective is a centering of attention upon a definite line of action.

As long as there is ignorance, bewilderment and no sense of desired direction, as long as there is hatred in the heart, fear cannot be superseded.

All of this has relation to the moods of the hour. The way out of labor troubles is no deep secret. The ways of getting on with employes are known and practiced by some already. There is no one particular best way. Many variants and many differing details of method are employed.

A society to advance management has, therefore, as one of its major mandates the job of helping to wipe out fear. This means making efforts to remove ignorance by publicizing existing experiences of harmonious relations. It means demonstrating that attitudes of good-will and faith in human nature have proved more advantageous than ideas that workers are out to "do" management and will not respond to creative appeals.

The proper approach to workers today is the very opposite of fearfulness. If this Society in its publications and in its conferences can help to cast out fear, it will do a valiant service.

Reorganizing to Prevent Losses

By JOHN R. MORSE
Registered Professional Engineer, Cleveland, Ohio

A complete audit of your company will discover the points at which losses occur. The application of sound management principles and techniques may divert these losses to profits.

AS A rule, a major warning that something is wrong with the affairs of a company comes when its officers approach the bank for additional financial assistance. In their optimism and faith in the future, the company's executives feel that the present need for cash is only temporary and that there will be no question as to their ability in meeting their obligations when they come due. Hence they are dumbfounded when the banker, after looking over their financial statements, courteously declines to render them further assistance and hints for them to plan to meet their present obligations maturing in the near future.

Now what can be done for the company by its own organization? First, the management must realize that it must do something immediately. Then, it is essential to get the management to analyze intelligently the factors involved. This may show that something is wrong with the company's methods, equipment, personnel, policies or management. It may be in one or in all of these factors. In most cases it has been found the safest assumption that what is wrong is the management itself. For, if the company has a sound management, the other factors are correctly controlled.

With this information as a basis, management can plan correctly to change those factors at fault. There might be too much working capital tied up in frozen inventories, accounts receivable, collections too slow, bad credit policies, unused production facilities, obsolete machinery and equipment, or any of many similar things.

When a company is in financial difficulties, it is not unusual to find that its major financial policies are not in proper relation to each other and to the business as a whole. I have observed cases where 85 per cent of the margin, after deducting field expenses, goes to pay the interest on the debts bearing interest. In this factor will be found the answers to such questions as: Where do they get their money, how is it being used, how are its investments protected, how is it distributed, why is this program followed unsuccessfully, etc.? These matters must be studied thoroughly.

The first constructive step which should be taken, after the preliminary analysis, is to separate the sources of losses into items to show the amount each has contributed to the total loss. This should begin with the balance sheet items where will be found many of the causes of losses. Perhaps inventories can be reduced and the resulting funds used to pay off interest-bearing obligations, thus liquidating capital funds and reducing expenses at the same time. In most cases it has been found that the business is really being run for the benefit of the banks. Too much of its available income may go to pay interest on the funded or floating debts. An examination usually reveals sources of funds to help alleviate the immediate requirements. Part of the excess of raw materials may be sold for quick cash even though at a slight loss.

This capital check-up should be followed by a careful and detailed analysis of the operating statements. If the management will lay aside its preconceived opinions of what is essential to its operations, there will be found a substantial number of expense items which are not really necessary for the success of the business. Perhaps the optimism of the sales manager has caused too many branch sales offices to be maintained. His ambition to head a big organization too frequently causes him to shut his eyes to those which are responsible for losses. All of the sales expenses should be scanned carefully as this group of expenditures is the source of many of the largest possible savings.

Frequently, the second step should be checking the balance between the sales probabilities and the production facilities. A material saving can be made by closing down branch plants now uneconomical due to lowered production schedules. Perhaps they were acquired in the days of optimistic expansion when the company merged with some of its competitors. Now, smaller production can be transferred to another plant and that one closed down. It may be more profitable to discontinue some products no longer selling in vol-

ume sufficient to carry the required overhead. Some competitor may have a better product or one selling at a better price.

As the check-up is being made of the production operations, frequently it will be found that there are unprofitable investments in land or buildings held for future growth. While these purchases may once have seemed far-sighted, now, with the company in financial difficulties, they are no longer profitable holdings. Hence they should be sold at any price even though this involves a book loss.

It may seem surprising to find what can be done through liquidation of unprofitable land, buildings, equipment and other items. If the business is handed over to a receiver, he would do this anyway. Hence, it may be a source of funds through which danger may be avoided.

The next step should be to attack the basic plans and policies of the business. Can changes in these be made so that they can be used to lead to a better performance? List and study what products are being made, the possibilities of dropping or adding products. Study the trends of sales volume of each product, conditions of competition both in the same field and in that of substitution products. Check carefully the present channels of distribution and effects of changes to others or additional ones.

One of the common causes of trouble lies in a poorly defined sales policy with relation to the products manufactured. The number of profitable products bears a close relation to the funds or working capital available to finance production and finished goods warehoused at the branches. Therefore, the number of products should be checked. There may be too many, perhaps too few, for the size and type of sales organization. Determine the sales volume for each product and see if this is ample to carry its share of the production facilities of the business. Production facilities must be operated in proper economic balance to better the profit factors of the business.

Now determine the number and type of customers. Selective selling will make a substantial improvement in the profits of any company. I recall a company which got into trouble by being so aggressive for sales volume that it forced its salesmen to increase volume by spreading distribution into a multitude of small outlets. They were selling nearly every retail store. The analysis I made of their sales showed that; whereas, during the previous year, about 80 per cent of their volume was distributed through 20 per cent of their customers, this year 85 per cent of the dealers were buying less than one hundred dollars a month. As a result the cost of selling this large group of small dealers had increased selling expenses by six cents on the selling dollar in the best districts and from there it went up to unbelievable percentages. In the aggregate, it increased their selling costs from fifteen per cent of the sales dollar to forty-three per cent of it. Back of this picture was a sales promotion program of prizes for new dealers. Each salesman getting the largest number of new dealers each month in each division was awarded a cash prize of fifty dollars, with a second prize of twenty-five dollars. This policy of prizes for new dealers was responsible for material losses for that company.

Next examine the company's price policies. Salesmen's performance must be checked to see if the men are being held closely to selling on these policies. In many cases, it will be found that a large part of the sales volume is coming from numbers in the line that have low margins, or salesmen's quotas are responsible for lowered sales volume in that they are being used to force the distribution of a product for which the men are not properly prepared or adapted to sell. The use of quotas not based on actual district buying power potentials tends to force the salesman to evade compliance with the prescribed price policies.

Study the company's sales promotion methods. In one case, a new model was announced and samples shown at the National show but it was three months before it got into production. This resulted in the buyers refusing to continue taking the old model and the company could not fill orders for the new one until the peak of the season had passed. Then they were overstocked with the model and it was partly obsolete when the next season started, so its prices had to be lowered. In another case, a new model came out but the sales promotion department did not have the catalogues or descriptive literature for it available to the salesmen and they had to try to sell it with only photographs of the model. This created a loss of time, caused by the buyer's sales resistance to accepting a product so poorly introduced. Consequently, a considerable saving can be made or a loss prevented by auditing the co-ordination between the sales promotion department and the sales department's activities.

The next thing is to find out if the salesmen can reach the right type of customers. Perhaps the salesmen are the order taking type and through some form of inferiority complex do not reach the

large buyers with the right kind of an approach. Also, it is important to see if the sales promotional efforts are made along lines that reach the type of customers from whom the normal bulk of the business is actually coming. In one case it was found that sixty per cent of the company's business was coming from a group of customers toward which no promotional appeal was being made. The sales organization was directing all its activity along other lines. How much greater might have been the volume from this source, with its lower sales resistance, than could be achieved along the lines the efforts were being pushed.

Most managements are backward on policies relating to personnel. In this day of scientific determination of employe qualifications by psychological tests, there are in existence many practical means to eliminate undesirable types and to lower the percentage of misfits who are being trained for work for which they are not fitted. Improved methods of selection, training and advancement of employes can do wonders in stepping up morale and lowering the turnover in personnel.

The next step is to examine the organization to see if it is best adapted to direct and co-ordinate the company's activities efficiently. A great deal can be accomplished by studying the organization, how it is grouped and controlled and the methods for co-ordinating its functions.

A study should be made of the executive personnel. Many executives have been carried over from the days of 1929. By careful manipulation and shrewd avoidance of pitfalls, they have been able to keep in jobs for which they are no longer fitted. Ballyhoo methods of management do not fit the requirements of today's economic conditions. It is possible to test the ability of the manager. Check his ability to analyze a few selected problems within his jurisdiction. See if he can take up new suggestions and carry them through to profitable results. Check his ability to supervise and his acceptance by employes as a leader.

The company's facilities for doing business should be checked next. Study its normal needs for present facilities, machinery and equipment. Perhaps these are not adequate, they may be somewhat obsolete. Savings may be made by the substitution of improved equipment and at the same time lowering costs. There are many cases where this program has returned its costs quickly in improved product, lowered costs and increased sales volume resulting from lower prices.

A careful audit should be made to determine if the business is being operated, as a whole, with the best methods now used by the more advanced industries. All methods and procedures should be checked over. In this way, a number of instances may be uncovered where things are being done in different places which can be grouped together for improved economy and better efficiency. In one case, it was found that some payrolls were made up in five different departments. This could have been done much better in one department.

Look over the boss's shoulder to see if he is getting the right kind of reports. It may be discovered that he is getting either too few or too many. It is also obvious that a report on the twenty-first of the month of the previous month's operations does not get much action as its data is no longer fresh. The incentive for action has been delayed too much. It will often be found that the reports the manager is getting no longer reveal the essential facts relating to proper managerial control of the business.

One of the best methods for control of a business is planning. Before a period of operation starts, prepare an estimated income and expense statement showing the probable sales volume in net, with the cost of sales deducted but figured on an ideal basis of a fair price policy for the period. From the resulting gross margin show the ideal field expense picture in detail and the resulting field margin. Then indicate other sources of probable income, less other expenses, and the administration costs, and possible profits.

As the period advances and the actual figures become available, exhibits showing the results of operations should be made to show the trend of performance. At the end of the six months' period, it is then possible to analyze the operations and place the figures out in the open where the management can see just where and why the ideal performance was or was not reached. To do this involves a study of the different parts of the business to determine the interrelation of both the internal and external factors or conditions and their effect upon each other. So-called budgets are nothing but statements of plans translated into financial figures.

It may be well to carry this procedure still further to show the effect on the business of changes in price policies, or of changes resulting from various sales promotional plans. Another might show the effect of the elimination of certain products or addition of other products to the line. Another could show the results of better selling control, or a plan of selective customer selling. These forecasts show the management where

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Personnel Relations in Hotel Management[1]

By H. E. STATS
Assistant to the President of the Hotel Lowry, St. Paul, Minn.

Here are the steps taken by a progressive hotel management to deal intelligently with its employes.

OUR organization based its personnel program on five cardinal principles:

First, that there is a new trend in social conditions, in labor conditions and in operating conditions of businesses in the United States. There is no argument about this point. The reactionaries who heavily opposed this idea have left the organization or have been converted.

Second, our company has recognized that there is no such thing as a free ride in a sound personnel program. The management conceded at the beginning that pep talks and back slapping would carry us just so far and no farther, and that after that we had to take action which would cost both time and money.

Third, it was recognized that prompt action had to be taken. There are no long-winded arguments between management and employes. In fact, there are no arguments at all. We reach our conclusions through discussion, not through argument. Once we have reached a conclusion, we act upon it. This has given a definite impetus to the progress made in the personnel work.

Fourth, we recognized that building a personnel program is not a finite job. Personnel relations is not a static accomplishment. There is no stopping point. We will be working on our personnel program until the company no longer exists. We feel that this is the essential point in the whole picture. We have no five-year plan.

Fifth, we recognize that the executives who are on the firing line administering our personnel program must have backing and we insist that they get it. There should be no welching on the part of any executive of the company, particularly is this true when the decision made is in favor of the employe. The management will reconsider a decision in favor of the company, but never is anything, once given to the employe, taken away again.

Less than two years ago we had no program of personnel activities.

We started quietly by putting into effect what is known as the "open door" policy. All executive doors were open. Employes could say what they wanted to executives and not be afraid to speak. We found, however, that it wasn't enough just to keep the doors open, we had to find a way of getting employes to come through them. So we started a periodic personnel interview system on an annual basis. We selected the employe's birthday as the day on which, at least once a year, he is called for a private conference with the management. One of two major executives of the organization, *neither of whom is the personnel manager,* has a friendly chat with each employe for a half hour or more. During this conversation we discuss the employe's relations with the firm, the conditions under which he works, his ambitions, and so on.

From these interviews, it became apparent that the line executives themselves were a problem and this discovery was the cause for our next move. We changed our standards for the selection of new executives. The company had been selecting executives on their ability to perform the particular kind of work they applied for. No consideration was given to their ability to handle employes, so the management established a policy by which no employe would be promoted to executive rank or hired in from the outside unless it was known that he was able to handle people. This became quite an issue where executive changes were made. In several cases the management passed up hiring or promoting efficient men simply because their record indicated that they used slave-driving methods.

Then we began to educate all of our executives. This did not prove a simple job, but even consistent offenders have been helped. Management decided that it could lay the cards on the table and frankly told the executives that one of the conditions of employment was that they maintain harmonious relations between the employes

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1 Adapted from a paper presented at a meeting of the Retail Management Association, February 10, 1937.

and the organization, and that if they were not able to do this, it would be necessary to find executives who could.

One of the obstacles to harmonious personnel relations has been a conflict between age and youth. I believe that a major objective of personnel relations is to bring the older and the younger executives to an appreciation of the necessity for both in the organization and that the development of co-operative relations between them is one of the major functions of the personnel program.

After this education was satisfactorily under way, we began to produce for the employes and to give them something tangible to feel. We started with physical changes in the plant. We cleaned up the employes' locker room, installed additional shower baths, toilets and so on, redecorated and rearranged the lockers so that the employes had a fairly pleasant locker room. We installed an employe luncheon room. Before this installation, the employes had to eat wherever they could. Next we provided uniforms. We had learned that employes who were committed to work in shabby, cast-off clothing had less self-respect than those who wore neat snappy uniforms. It was a revelation to see the effect that a new coat and clean trousers had on the morale of the boy operating the freight elevator who never had occasion to meet the public. And this improvement in morale had even more profitable results with the employes in contact with our guests.

We continued with the safety program which of course is still being pressed and which has resulted in a reduction in our compensation accidents by almost 50 per cent. We decided to reduce the restrictions on employes which we had discovered in studying our safety program. There had been a lot of obsolete restrictions which had proved an annoyance to the employes because there was no reason for them. For example, there was a corridor in the basement of the hotel which was plastered with "No Smoking" signs. Upon investigation we discovered that there was absolutely no reason why smoking should not be permitted in the corridor, so we put up a big red sign reading "Smoking Allowed." Since that sign has been posted, there have been fewer cigarette butts in the corridor than there were before.

We next started a campaign to make everyone's job easier. This sounds idealistic. However, in a number of cases, we actually saved employes an average of four miles walking per month. This reduction of unnecessary effort improved the hotel's service with the result that benefits also accrued to the management.

Then we started attacking the program of reducing labor turnover, which, I must admit, was scandalously high. Of course, our major purpose in cutting turnover was to make our people feel the improvements that were taking place by keeping them long enough to experience the improvements. We cut our turnover by means of a single, simple ruling that every employe leaving the organization for any reason had to be personally interviewed by one of two of the major executives in the company. This ruling was quickly understood by the line executives who reasoned that if every employe was going to talk to a major management executive before leaving, the line executive would have to be pretty certain that his reasons for dismissing an employe or the causes for an employe's resignation would not backfire on the line executive. Turnover dropped just 50 per cent.

Then we came to the money question. So far the cost of our program in dollars and cents had not been large. We had taken our free ride just as far as it could possibly go. Our first move was to adopt a one-week vacation with pay for all employes with a year or more of service. There were some heated executive battles when it came to these matters which cost big money, but all of our wage increases, etc., were finally adopted by the management without a single demand from the employes for any of them.

The vacation was rather unenthusiastically received at first, the comments running along the line of "well, we should have had it a long time ago," which of course was true. However, we have been feeling the effects of it recently.

Following the announcement of the paid vacation, we started raising pay. We made two general pay increases between which 90 per cent of the employes were covered. These increases, of course, were well received and in every case the company has received benefits and *profits* from the increases through increased employe production. We have experienced no loss through any of the wage increases mainly because we believe the groundwork for them had been laid so that the people recognized them as a part of a long-range improvement program to benefit them and for which in all fairness they should render commensurate service.

By this time we realized that even our open-door policy and the annual interviews were not adequate means for getting real understanding between management and employes. We realized the national trend toward collective bargaining. We recognized that an executive's door may be wide open, but because both the executive

and the employe are busy, it is not convenient for an employe to get the opportunity to talk over matters to the executive. We also realized that there is a certain amount of shyness on the part of employes which makes it difficult for a lone employe to barge in on his superior with more or less trivial matters. So we decided that the only thing to do is to set a special time at which the executive is free and at which he expects to talk with certain employes. We also had to go one step further and place an obligation on the employes to be there to talk.

The result of this decision was the organization of what might be called a collective bargaining group of employes, but which we call a joint conference committee. In setting this up we began by calling together a few of the older employes from each department. I explained the program to them almost exactly as I have explained it to you and I was not surprised to find that they hadn't realized that there was such a program. I told them that the company felt that this program had reached the point where they should be given some means of bringing their ideas and feelings directly to the management's attention without going through a lot of departmental red tape. I suggested, and I was careful to make clear that it was just a suggestion, that the method for accomplishing this communication would be a group of employes that got together occasionally with the management and talked over matters regarding the business as a whole which were of mutual importance to both them and the management. I suggested that the employes go back and talk it over with the rest of the personnel and, if everyone liked the idea, that all the employes get together and select one or two who were not executives or straw-bosses in each department to act as spokesmen for them in these meetings. When I had finished, an old employe got up and said that he thought it was a great idea. His twenty years of experience in a great many places had an effect on his listeners. The employes who were at the meeting concluded to meet with me again a week or so later and report what had been decided. The following week a different group of men showed up at the scheduled time. They reported that the idea had been enthusiastically received by everyone and that, as had been agreed upon the previous week, the entire personnel had chosen their spokesmen for the committee and those present were the spokesmen. The selection was made wholly without any interference by the management. In fact the management took great pains to avoid knowing how these spokesmen were selected,—and we still don't know.

At this first meeting of the spokesmen, three grievances were presented. Fortunately, two of them were simple and could be settled immediately, which we did. The other was referred to the next meeting the following week.

At the next meeting, the same representatives came back and brought with them twelve or fourteen new matters. About eight of these were grievances and six of them suggestions for the improvement of the operation of the business, and not one of the suggestions was in any way unreasonable. In fact, they were the type of suggestion that you would normally expect to receive from a staff executive.

It was felt that a large group was too unwieldy efficiently to handle the conference, since the committee as it was then composed consisted of about eighteen to twenty employes. This committee later decided to appoint a steering committee of five which would meet at weekly intervals and handle the details of any matters brought up in the course of discussion. The balance of the spokesmen would meet with the management only on matters which affected the general personnel or which affected departments which had no representation on the steering committee. Both of these informal groups have no name. There are no formal rules, no formal set-up of any kind. It is just a group of spokesmen for the employes which meets with the management at regular stated intervals. We talk about all kinds of problems affecting the business, both those that are the responsibility of the management and those that affect the employes.

The steering committee has met several times with the management. We have ironed out most of the details that have come up and others are in process of investigation. One of the matters they brought up was the organization of a marching club for the Carnival. The club was organized and made an effective showing which was, of course, good advertising for the hotel. All in all, I have found the group a fair one to deal with and I emphasize that it was chosen by the employes and not in any sense hand-picked by management.

We have had about one-half dozen meetings between the management and the steering committee and have settled satisfactorily so far more than 50 per cent of some forty-four grievances and suggestions that have been brought up in the discussion. We have certainly noticed distinct improvement in the attitude of all of

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Control of Plant Expense Through Variable Budgets[1]

By FRANK KLEIN
Director of Budgets, Worthington Pump and Machinery Corporation, Harrison, N. J.
and
President, New York Chapter, National Association of Cost Accountants

Budgets need not, and should not be mere guesses or estimates as they are sometimes called. In fact, the progress of budgetary control methods now makes it possible to establish standards for plant overhead with the same degree of accuracy as is obtained by many organizations in their establishment of direct labor rates or standards.

The Nature of Plant Overhead

PLANT overhead is the cost of those acts that must precede, supplement, and follow the direct manufacture of the product. If all of these auxiliary expenses proceeded at the same rate as the production of output, there would always be a constant relationship of the cost of overhead to the product, regardless of volumes. Overhead control then would be on the same basis as that of direct labor; that is, double the quantity of output would cost twice as much overhead, triple the volume of output would cost three times as much overhead. But some expenses remain exactly fixed regardless of volume, others are in direct proportion to manufacturing operations, while still others range the entire distance between these two groups.

Because there has been no uniform variations of all overhead expenses with productive volumes the systematic control of plant overhead has seemed confused. If we will correctly appraise the necessity for each plant expense in the scheme of production, and then determine the extent to which those expenses should vary with productive volumes, we can establish variable standards or budgets that will meet the requirements of any operating conditions.

But in making a study of plant expenses and their relationship to plant output, we shall not stop with the single consideration of an expense control, because we will find that there are various by-products from our studies that will prove equally valuable to management. As we proceed with our discussion we shall point out some of these, and their significances.

[1] Presented at a meeting of the New York Chapter of The Society for the Advancement of Management, January 20, 1937.

General Principles of Expense Control

While the application of an expense control will vary with the individual business, there are certain general principles that apply to any organization:

1. Every foreman or supervisor who has authority to incur expenses should be given direct responsibility for their control through a separate budget for his own department; and nothing should be allocated or prorated to him arbitrarily.

2. The allowance or standard for each expense should not be taken from past actual expenses but should be based on a study of the actual requirements of the expense in the plan of production.

3. The control should cover every expense of every department; there should be no exceptions or loopholes.

4. The control should be designed to fit into the requirements of a general Corporation budget regardless of whether a complete profit budget is being installed at the time.

With these points in mind we shall proceed to a detailed consideration of the various steps to be taken in establishing a variable expense budget.

Departmentalization by Responsibility

It is first necessary to determine the extent to which the cost department should subdivide its present departmental classification in order to departmentalize all operations according to the responsibility of each foreman or supervisor. For instance, the present Machining Department will be subdivided into Machining, Department A, Foreman Harris; Machining, Department B, Foreman Hill; and so on until separate divisions have been provided for each foreman in the Machining group. Please note that this does not imply

any *change* from present accounting methods, but merely a refinement or extension of them.

This plan of recording and reporting the operations of each foreman's division separately, makes it possible (a) to measure accurately the activity of each separate department, (b) to allocate or provide the expense standards necessary for each department's activity, and (c) to concentrate the attention of each foreman on the many expenses occurring in his own department in order that prompt corrective steps may be taken when necessary.

Having determined the departmental responsibility of each foreman or other department head, we are ready to establish budgets for each, based on their productive activities if they are manufacturing departments, or on the service they are required to render if they are so-called service or indirect departments. In either case a department has a definite function to perform on account of the productive processes then in operation, and the expenses which may be incurred must be related to, and limited by, those productive operations.

Basis for Measuring Departmental Activity

This brings us to the next step—that of providing a constant and systematic measure of the actual work (a) performed by the manufacturing department, or (b) required of the service departments incidental to their auxiliary work to the manufacturing department. It is proper that all calculations should be based on manufacturing activities and their incidental output, because they, in turn, measure billings or income which must, of course, control all plant expenditures.

A plant or department processing a uniform product at a constant rate of production would require the most simple type of budget control. Here the uniform rate of production would assure a specified output of units of product within a given time, and the amount of various types of plant expenses would remain fixed during the period that the plant or department remained in operation. It would be a simple matter to state the output for any given time in terms of units of product, or in billing dollars which such units would produce.

But suppose that a plant or department which manufactures one uniform product processed it on various machines, some of which might be closed down at times, resulting in a variation of the volume of output. Here it would still be possible to state the output in terms of units of product or billing dollars, but it would be necessary to check closely the number of units produced in any period, in order to be sure that plant overhead also was maintained in line with the changed productive volume.

Now assume that a plant is processing job orders and regular stock orders in the same departments, as is the case in so many of our industries at present. There is no longer a standard unit of product turned out by which the departments' productive activity can be measured. It is necessary then to turn to some other uniform measure of output, which, in this case, may be either direct-labor hours, or productive-labor work units, if direct-labor standard units are in use.

The principle that we are developing here is that whichever basis most accurately measures the total productive output of the department is the one to be used.

Determination of Departmental Capacity

It will simplify our discussion if we select a typical productive department and set a budget with the foreman. Foreman Harris is in charge of the Drill Press Department designated as Machining Department A.

Upon review with Harris we find there are fifty drilling machines in his department. As the standard work week is forty hours, his department will produce to its utmost capacity during that work week if every machine works every hour. Therefore his 100 per cent capacity will be fifty machines times forty hours, or two thousand productive hours a week. It is true that he will rarely ever be able to operate every machine every hour of the working week, and it is also a fact that he may produce beyond his 100 per cent capacity by working overtime or by putting on more than one shift. But the operating capacity of his department, for our expense control, is the amount of work that will be produced by all productive facilities operating the full working period. If we wanted to determine what a plant could produce over a period of time we would allow for unbalanced production, breakdown, and other idle time of equipment; but for expense control purposes we propose to determine the cost of operating every machine every hour of the period, and to reduce these allowances when any machine stops operating for any cause.

On this basis two thousand productive hours represent 100 per cent capacity for the department. With this 100 per cent productive capacity determined, the probable range of operations of the department for the coming year should be estimated. If, for example, expected sales would require the department to operate

at about 75 per cent of its capacity, we would select an operating range from 50 per cent to 100 per cent to provide for deviations from the expected volume. In a business where fluctuations are likely to be even more violent, a larger range would, of course, be provided.

To continue with our example, we shall take a sheet similar to Exhibit 1, and on the second line, "Per Cent Capacity," insert the desired range in even steps of 5 per cent each. On the first line, "Direct Hours," we shall then place the number of hours that correspond to the percentage of operating capacity. These two lines will show not only the maximum volume that this department can produce in a given time, but by relating to it the actual direct hours worked, will show the actual per cent of capacity worked, or the extent to which the productive facilities were utilized during the period.

Just one further point on the determination of capacity. If the department's output was not determined by productive machine tools, then whatever constituted the limiting factor in output would be used as the basis for determining operating capacity. For instance, in the wood pattern shop where work is principally by hand although supplemented by a few machines such as saws, buffers, and drills, the bench space available for patternmakers would determine its capacity. Or in an assembling department, the floor or bench space available for productive operations would be used as the basis. You will note in a job order business such as we are discussing, that the capacity of each department must be considered independently, whereas in a plant processing a uniform product, it may be desirable to relate all the departmental capacities, since the output must be processed with uniform regularity from one department to the next.

WESTINGHOUSE PUMP AND MACHINERY CORPORATION

WORKS INDIRECT EXPENSE BUDGETS PER WEEK FOR VARIOUS OPERATING CAPACITIES

WORKS ____ DEPT. ____

REVISED ____ 1 WEEKS RATES FOREMAN

NO.	DIRECT HOURS	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800	1,900	2,000
	PER CENT CAPACITY	50	55	60	65	70	75	80	85	90	95	100
01	Executive Staff											
02	Foremen	40	40	40	40	40	40	80	80	80	80	80
03	Inspectors											
04	Clerical	24	24	24	24	24	24	24	30	30	30	30
	Total Superv. & Cler	64	64	64	64	64	64	74	80	80	80	80
10	Guards & Gatemen											
11	Oilers, Sweep. and Clean.	10	11	12	13	14	15	16	17	18	19	20
12	Internal Transportation	7	7	7	7	7	7	9	9	9	9	9
13	Personnel Adjustments											
14	Idle or Lost Time											
15	Other Indirect Labor	35	38	41	44	47	50	53	55	57	62	65
	Total Indirect Labor	52	56	60	64	68	72	78	82	86	90	94
20	Fuel											
21	Sand											
22	Nails, Rods and Wires											
23	Binders and Facings											
24	Grinding & Polishing Wheels	4	4	5	5	6	6	7	7	8	8	9
25	Paints, Lubricants & Waste	5	5	5	6	6	6	7	7	7	8	8
26	Stationery & Office Supplies	1	1	1	1	1	1	2	2	2	2	2
27	Miscellaneous Supplies	5	5	5	5	5	6	5	6	6	6	6
28	Purchased Electricity											
	Total Operating Supplies	15	15	16	17	18	18	21	22	23	24	25
40	Real Estate											
41	Buildings											
42	Machinery	30	33	36	39	42	45	48	51	54	57	60
43	Motors	6	7	7	8	8	9	9	10	10	11	11
44	Semi-durable Tools & Inst.	90	99	108	117	126	135	144	153	162	171	180
45	Internal Transp. Equip't											
46	Carting Equipment											
47	Furniture and Office Appl.											
48	Flask Equipment											
49	Patterns											
50	Miscellaneous Equipment	4	4	4	4	4	4	4	4	4	4	4
	Total Maintenance	130	143	155	168	180	193	205	218	230	243	255
60	Re-arrangement of Equip't											
61	Postage											
62	Telephone											
63	Telegraph and Cable											
64	Inventory Adjustment											
65	Employees' Welfare	3	3	3	3	3	3	3	3	3	3	3
66	Liability Insurance											
67	Dues and Subscriptions											
68	Gratuities											
69	Rentals											
70												
71	Miscellaneous Expense	4	4	4	4	4	4	4	5	5	5	5
	Total Sundries	6	6	6	6	7	7	7	8	8	8	8
	Total Above Charges	287	304	321	339	357	374	393	410	427	445	462
80	Depreciation											
81	Insurance											
82	Taxes											
	Total Fixed Charges											
	Total all Charges											

Determination of Expense Allowance

To continue with our consideration of the Drill Press Department. We know the function of the tools in this department, their number, and the total volume of productive hours or units of work they may produce in a work week. The next step is the determination of the proper expense allowance for this department to function at each of the operating points in the selected range of capacities.

For instance, the payroll report shows that this department is currently working 1,312 direct hours, corresponding on our Exhibit 1 to 65 per cent capacity. If a study is made of the expenses necessary for present volumes it will be possible to establish the expense budget or standard for 65 per cent capacity. This same study, having revealed the purpose of each expense and its requirement in the productive processes, will also show to what extent the expense should vary as production increases or declines.

Take the first expense item on our list—Foreman's salaries. It is found that the full time of one man is required at present, and would be even though operations dropped progressively to 50 per cent. On the up side, experience has shown that when operations exceed 75 per cent of capacity, it is usually necessary to add a small night shift due to unbalanced production requiring the excessive use of certain machines. So it becomes necessary to have the part time of one of the night foreman, and a portion of his salary is therefore provided in the budget from 80 per cent up.

The next item is the salary of a shop production clerk who is likewise required down to 50 per cent capacity and who can handle his work up to 75 per

cent. In fact it is found that if the night foreman can handle the production tickets for him at night, he can catch up on his postings the following morning, and so carry on with the same expense up to 80 per cent. Above that point, however, it is necessary to use the part time of a night production clerk.

It is found that the expense of Oilers, Sweepers and Cleaners changes in direct proportion to productive volumes worked, and the expense allowances are accordingly varied.

Similarly, the requirements for each of the other classes of expenses are determined and set down in the various capacity columns, until each item of expense necessary for operating the department at each of its points of capacity has been listed. If each of the capacity columns is then totaled, the total department's expense budget or allowance for each operating capacity will be shown.

Basis of Non-Productive Department Budgets

While each productive department may have its individual expense problems, the same general principle just outlined will be followed in establishing operating capacities and expense standards for all of the remaining productive departments. But please note that having established the fact that direct hours are to be the basis for measuring plant activity, all productive departments must use the same basis, or it will not be possible to establish the capacity for certain groups, such as the entire machining division, the foundry, or the total plant.

In addition to other uses that will be mentioned later, it is necessary to establish capacities for certain groups of departments in order that the work and expense of their service departments may be related to them. For instance, there may be a General Machine Shop Department, to which would be charged all those expenses that apply in general to all the machine shop departments, but which for practical reasons cannot be allocated to any. These might include the shop superintendent, his clerks, general traveling crane service, maintenance of the building, general cleaners, etc. It is obvious that those items which are variable will depend upon the general activity of the machine shop. Therefore, a summary is made of the productive capacities of all machine shop departments, the resulting figures representing the total productive capacity of the machine shop. These would be placed on a separate budget sheet for the General Machine Shop Department and a study made of the necessary expenses and their variations with changes in the general shop capacity. The same procedure would be followed with the foundry and any other major groups of productive departments.

Following this principle, a summary is then made of the capacities of all productive departments throughout the plant. The result is a total plant productive capacity on which would be based the expense requirements of those general service departments that function for the plant as a whole, such as Stores, Accounting, Routing, Power Plant, etc. The expense budgets of these general service departments would, therefore, vary with general plant capacity.

In this way the expenses of every productive department are judged and allowed according to the productive work they perform, while the expenses of each of the service departments are based on the productive activities of the departments they serve. The result is a plant budget in which expenses are varied throughout with operating volumes.

Budget Summary of All Departments

Ordinarily it would appear if any expense budget had been carefully set for each department of the plant, that we would then be ready to place it in operation. But it is desirable to first check whether the standards, as set, will yield the required result. If an unsatisfactory profit condition existed before the application of a budget, we certainly would want to see that provision has been made for its elimination before accepting the budget. If a plant expense control alone is being established there will be no opportunity to determine directly the expected net Corporate profit result, but it will be possible to determine the point of complete burden absorption as well as the under or overabsorbed burden that will result from lower or higher operating volumes. This would be done by summarizing, as we have shown on Exhibit 2, the various operating capacities for which the expense budget provides, the total plant direct hours for each stated capacity, the total of all plant expense budgets for the corresponding capacities, the depreciation, insurance and tax charges, and the total of all these expenses. By applying a weighted average of all plant burden rates the expected burden absorption at each capacity is shown, and in the final column appears the resulting under or overabsorbed burden at each capacity as provided by the budget.

In our example we have assumed operations will average 75 per cent capacity over the year, and this summary shows that burden will be completely absorbed

"W" WORKS
BURDEN ABSORPTION AT VARIOUS CAPACITIES
PER WEEK—1936

% Operating Capacity	Direct Hours	Variable Expense Budget	Depreciation	Insurance and Taxes	Total Works Indirect Expenses	Absorption at $.949 per Direct Hour	Under-Over x Absorbed
50	25,485	24,231	3,064	1,603	28,898	24,185	4,713
55	28,034	25,658	3,236	1,603	30,497	26,604	3,893
60	30,582	26,536	3,409	1,603	31,548	29,022	2,526
65	33,131	27,360	3,581	1,603	32.544	31,441	1,103
70	35,679	28,036	3,753	1,603	33,392	33,859	467 x
75	38,228	28,810	3,925	1,603	34,338	36,278	1,940 x
80	40,776	29,677	4,097	1,603	35,377	38,696	3,319 x
85	43,325	30,565	4,269	1,603	36,437	41,115	4,678 x
90	45,873	31,302	4,441	1,603	37,346	43,533	6,187 x
95	48,422	32,212	4,613	1,603	38,428	45,952	7,524 x
100	50,970	32,854	4,785	1,603	39,242	48,371	9,129 x

x Indicates Over Absorbed.

at slightly under 70 per cent and that at 75 per cent there will be $1,940. overabsorbed burden per week. We, therefore, know that if our standard direct material, labor and applied burden costs permit a fixed profit per billing dollar, that this profit will be increased by $1,940 per week overabsorbed burden.

If, instead of the desirable result shown in our example, an unabsorbed burden balance had been indicated at the expected point of operating capacity, then the budget would not have been accepted until engineering studies of the plant operations had determined how and where the budgets could be reduced to provide for elimination of the unabsorbed burden balance.

Assume another case where the sales quota, based on previous years' business, when interpreted in terms of productive hours showed that operating capacity would only be at 50 per cent. It is probable that management would immediately question why so small a part of the productive facilities were being utilized. If a fair share of available business were already being obtained, perhaps development of new products would utilize the excess capacity.

Another interesting use is made of the plant capacity tabulation when there is more than one operating plant, each of which produces separate lines of product. It is quite possible that the Sales Department, with no definite knowledge of annual plant productive capacities, will prepare sales quotas by products which, when segregated according to plants, would require excessive operating capacities at one plant and subnormal capacities at another, resulting in inefficient operations at both. Obviously, such quotas should be revised to provide for efficient loads for each of the plants.

Again, look at Exhibit 2, and you will see that it is possible to determine the additional overhead cost of processing any additional volume of business. For instance, a job requires 45,000 productive labor hours and will require eighteen weeks for production. This would result in an average of 2,500 hours per week. If present operations were at 65 per cent capacity, or 33,131 direct hours per week, the additional job requiring 2,500 hours per week would raise the capacity to 35,631 or 70 per cent of capacity. The total increase in works indirect expenses in going from 65 per cent to 70 per cent is $848 per week, and at eighteen weeks production, would cost $15,264 in overhead to process the job.

No doubt your knowledge of conditions within your own organization will suggest further uses of such data. Perhaps a daily or weekly report of each department's actual capacity worked, made to the operating and sales executives, would result in clearing up causes of production delays, or might stimulate effort to obtain the type of bookings required to boost those departments with low volumes.

The entire study of plant capacities, and their effects on profits is a very interesting one, and well worth the effort in any organization.

Operating the Expense Budget

So far we have discussed the principles to be followed in establishing a plant expense budget, and have outlined the method of determining whether the standards are economically sound; that is, whether they will yield a satisfactory result, if followed. When these requirements have been satisfied, the budget is ready to be placed in operation. And if the foremen and department heads have collaborated in its establishment, they will be ready to *place* it in operation, for it is the men who incur the expenses who must be responsible for their control.

Each foreman should be furnished with a copy of the budget for his department. This constitutes his commitment for expenditures, and is his guide for the required expense changes when productive volumes increase or decline.

It is necessary that report periods for variable budgets be reasonably short in order that operating capacities worked may be promptly determined and the corresponding expense allowances made. This permits follow-up while expenses are fresh in mind and enables corrective steps to be taken quickly. In our example, the budget period is one week, and in practice we find it possible to get all budget reports to the foremen by Thursday of the week following expenditures. Some organizations have felt justified in using a daily basis; others a half month or month. But for most organizations much of the value of a budget will be lost if the report period exceeds one week.

To revert to our original example, let us assume that the budget has been in operation for one week and we are ready to prepare the weekly report for Foreman Harris' department. From the labor reports, we learn that his department worked 1,508 direct hours during the week. This information is noted on a form similar to Exhibit 3, on the lower line in the "Actual" column. Reference to the master budget sheet, Exhibit 1, shows that the nearest established operating capacity is for 1,500 hours representing 75 per cent capacity. These hours and their corresponding expense allowances are then placed in the "Budget" column. The usual accounting tabulation of all the departments' actual expenses are then listed in the "Actual" column and a comparison made of the budgeted and actual expense performance.

It will usually be found that labor, if effectively controlled, will remain within the budget limits, except for some unusual circumstances.

Supplies may vary somewhat from the allowances,

DEPARTMENTAL INDIRECT EXPENSES
BUDGET AND ACTUAL

Drilling Press 90-A Dept. Week Ended 193
Mr. Harris Foreman 75 Per Cent Capacity

NO.		WEEK BUDGET	WEEK ACTUAL	MONTH (...Weeks) BUDGET	MONTH (...Weeks) ACTUAL
03	Inspectors				
04	Clerical Force	26.00	24.00		
11	Oilers, Sweepers and Cleaners	15.00	14.00		
12	Internal Transportation	7.00	10.00		
13	Personnel Adjustment				
14	Idle or Lost Time				
15	Other Indirect Labor	50.00	46.00		
	Total Indirect Labor (Items 11-15)	72.00	70.00		
20	Fuel				
21	Sand				
22	Nails, Rods and Wires				
23	Binders and Facings				
24	Grinding and Polishing Wheels	6.00	24.00		
25	Paints, Lubricants and Waste	6.00	2.00		
26	Stationery and Office Supplies	1.00	2.00		
27	Miscellaneous Supplies	5.00	1.00		
28	Purchased Electricity				
	Total Operating Supplies	18.00	29.00		
41	Buildings				
42	Machinery	45.00	16.00		
43	Motors	9.00	14.00		
44	Semi-durable Tools and Instruments	135.00	120.00		
45	Internal Transportation Equipment				
46	Carting Equipment				
47	Furniture and Office Appliances				
48	Flask Equipment				
49	Patterns				
50	Miscellaneous Equipment	4.00	-		
	Total Maintenance	193.00	150.00		
60	Re-arrangement of Equipment				
65	Employees' Welfare	3.00	-		
71	Miscellaneous Expense	4.00	8.00		
	Total Sundry	7.00	8.00		
	TOTAL ABOVE CHARGES	314.00	278.00		
02	Foremen	40.00	40.00		
	Total Charges (Except Fixed Charges)	354.00	318.00		
	Variance (Black—Under, Red—Over)				
	Direct Hours	1,500	1,508		
	Cost per Direct Hour				

from week to week, depending on the nature of the items. If for instance, a single week's supply cannot be disbursed, as in the case of a grindstone, then the larger amount will temporarily overexpend this item of the budget, but will be offset in subsequent weeks when no actual expenses occur so that the cumulative figures will level out the weekly variations.

In the maintenance expenses, weekly variations may be large in individual departments, but will usually average correctly for the entire plant. In such cases, it is usually better to consider the cumulative budget and actual figures for each department.

Incidentally, maintenance costs should be handled as department expenditures even though repairs are made by a general maintenance department. The maintenance budget will have been set on the basis of the condition of equipment in the department and its re-

quired upkeep. If each foreman is responsible for his own equipment repair costs, he has an opportunity to control them, first, by requiring proper care in equipment handling, and second, by seeing that the costs charged to him are commensurate with the repair work performed. At the request of some of our men, we provided the maintenance department with pads of repair tickets. These require that the repair man, when reporting to a department, have the foreman of the department sign his starting time, and when the job is completed again check him out. This enables any question of charges to be ironed out immediately; it gives the maintenance foreman a more effective control over his men; and it gives to each department foreman an opportunity to become a careful buyer of the maintenance service he requires.

When the weekly budget report has been completed, any unusual overexpenditures should be circled in red pencil, and an explanation written on the reverse side of the sheet or on a separately attached slip. This gives the foreman the information he will require regarding his expenditures and the need for corrective steps.

Usually a copy of each department's budget report is also given to the plant manager, after which he may make contact with the foreman individually, or through a short budget meeting or by a brief note. The method of follow-up and steps taken to insure adherence will, of course, depend upon management policy.

Summary

We have covered in some detail the mechanics of setting up and operating a variable expense budget. While the primary purpose has been to establish a proper basis for the measurement of plant expense with fluctuating volumes, we have also provided a measuring stick of plant capacity, and have laid the foundation for a complete profit budget.

But most important of all, we have concentrated the thoughtful attention of each foreman and department head upon the *financial* as well as the *production* aspects of his job. For instance:

1. There has been a review, with the supervisor of each department, of his productive facilities, and of the necessity for each type of operating expense incurred by him. This may unearth obsolete or unnecessary practices initiated under different conditions, or assumed from a predecessor as a matter of course.

2. Every item of supply, labor or maintenance, is interpreted in terms of dollars, sometimes previously unknown. Appreciation for the values being consumed in a department usually results in a more thoughtful use and conservation of them.

3. Through the weekly reports constant attention is focused upon expenses and the need for relating them to volumes produced. Every proposed expense is thus related to the budget and if not provided for, is questioned.

4. The advance knowledge of what changes must be made in the labor and other accounts as outlined in the budget, makes it possible to plan those changes in advance of the changed capacities, thereby avoiding jams incidental to increased production, and eliminating lag in expense reduction when volume declines.

Each supervisor knows just what is required to operate his department on a profitable basis and he is assured through the individual reports that the results of his careful management will not be submerged with the wastes of some other department. Consequently there is no need for indiscriminate expense reductions due to falling plant profits. Attention is quickly focused by the budget at the exact point requiring attention long before these costs reach the monthly income statement.

Closing

Just as written *engineering* specifications are necessary to build a product that is *mechanically* correct, so written *cost* specifications, in the form of budgets, are necessary to insure the desired *financial* result. To the extent that each responsible supervisor in the organization makes *his* budget a state of mind through which his costs are controlled, to that extent will the status of the organization be improved, and with it, everyone connected with that organization.

A Note on Executive Planning

By COMSTOCK GLASER

The Need for Executive Planning

The planning of executive work to avoid the onus of red tape is a crying need today.

WHENEVER a public or private agency fails to "deliver the goods" and the outsider thereby inconvenienced complains to the clerk at the clients' or customers' window, he receives a reply something like this: "We cannot go ahead with your case until the proper authorization 'comes through.' You must remember that our procedure is very complicated."

Thousands of people who deal with the Government and with large private concerns are waiting for something to "come through." The "procedure" that each piece of business must "go through" is found in the rules and regulations of organizations, in general orders and instructions, and in the decisions of executives. These rules and customs of governmental and business units are their traffic regulations. They are good or bad according to the results obtained. In all too many cases they are a shambles of unco-ordinated and illogical habits which have continued to exist because no one bothered to plan an intelligent system of executive traffic.

The planning of routes for executive business, and the dividing of units of business (be they orders, cases, or projects) into individual tasks assigned to workers of the proper functionality and degree of skill, may be spoken of as *executive planning*. This function should be distinguished from that of drawing up major policies and long-run objectives, or *administrative planning*. To put it another way, *administrative planning* decides *what* is to be done while *executive planning* decides *how* it is to be done.

Executive planning is absolutely necessary for the efficient conduct of a large organization, for the same reason that scientific management of physical production and of clerical work is necessary. Yet it is only beginning to come into its own as a definite function, and its basic principles are still on the frontier of knowledge. The need for a scientific technique of executive planning is most apparent in the Federal Government, because that is the largest organization in the country, and because our current political policies have thrust countless new problems into its hands. Yet this need is almost as great in the giant modern corporation. It will tend to become greater as production becomes more completely mechanized and the bulk of personnel is shifted over to executive and sub-executive work.

It is the purpose of this article to see if there are not certain "basic principles" which may be used to create a scientific technique of executive planning. As the term is used here, this means charting the course of matters which involve professional work and decision making by a series of individuals, the "power relationships" between these people, and the manner and order in which these matters are transferred from one worker to another.

The visible result of executive planning is "procedure"—plans of organization for divisions and units, rules and regulations, and executive orders. This procedure is often codified, as in the manuals issued by large Federal departments. Yet it exists whether or not it is planned, or even recognized as such. It is inherent in executive work. For the work of the executive really consists of dividing up big jobs into individual tasks, setting up "production lines" and then checking to see that the work has been well done. These functions of execution are carried on with reference to norms laid down by written or customary procedure. It need not be argued that these norms should be scientifically planned.

What It Is

Planning, executive or otherwise, is an analytic process involving several stages. In his excellent article, "On the Technique of Planning," [1] Dr. Person describes these stages as: (1) definition of purpose, (2) formulation of policies—determining the exact limits of projected activity, (3) formulation of program—arrangement of ways and means in a tentative program of action, (4) design of plan—bringing ways and means into exact

[1] Person, H. S. "On the Technique of Planning," *Bulletin of the Taylor Society and of The Society of Industrial Engineers*, November, 1934, page 29.

quantitative, qualitative, and functional relationships, and (5) differentiation of projects—making each as independent as possible. The executive planner has to do mainly with steps three to five. But he must take care not to plan the details of technical operations which he does not understand. "Detailed specification," says Dr. Person, "is a function of the technological methods necessary for the achievement of the objective; not of planning itself. Planning does not seek detail in arrangement for its own sake. It seeks rather to discover the least pre-arranging which the technology of achievement of the particular objective requires."

Executive planning, as a development of scientific industrial management, seeks to eliminate waste motion. A method of analyzing motion in executive work is thus essential. It is possible to derive such a method from the very substance of executive action. As has been suggested, the executive does not directly handle much of the work which goes on in his office. He is essentially a controlling officer. He divides up the work, assigns tasks to his various subordinates, regulates the order in which work is done and the way it is transferred from one worker to another. These transfers of work, or more exactly of the pieces of paper on which the work is recorded, may be spoken of as executive traffic. All the transfers needed for a single whole job may be called the "motion" of that job, and each shifting of the job from one person to another may be called a "move." After the executive planner has analyzed an existing or projected job, and has divided it into its individual tasks, he should see how many moves are needed. He should, in the interests of efficiency, try to reduce the number of moves as much as possible.

An executive move may take anywhere from a few seconds to a few weeks. The time taken, which we shall call "motion delay," consists of three elements: (a) the time required to transfer the work from one person to another, (b) the time before the person who receives it gets around to acting upon it, and (c) the time which he takes to decide what to do about it. In efficient industrial production, where the job (the unit of product) consists of a great number of tasks, factor *a* is reduced to seconds, and factors *b* and *c* are eliminated. This is only possible where the work is standardized, and where speed and feed may be regulated. But in executive work, the essence of which is nonuniformity, standardization of jobs is impossible, and only the tasks composing them can be to some degree standardized. The flow of work is always uneven, and the three elements of motion delay are at a maximum because the organization is continually adjusting to new problems.

For the same reason, motion delay is variable, and only partially predictable. There is, however, a real cost of money and of efficiency attached to every executive move. To make any given move worth while, the money and time cost must be compensated for by (a) efficiency aided by specialization and (b) by the prevention of costly mistakes through supervision. Thus, executive planning requires careful estimating of the gains and losses produced by each move.

How It Applies

To show how this applies to an every-day problem, let us take the case of a construction superintendent on a public works project who needs a steam shovel. The purchase of this expensive engine is an executive problem of some importance, particularly if salesmen are present who have good political connections. The simplest way in which the superintendent could get his steam shovel would be to purchase it on the open market. However, the rules of all governmental agencies (and most large companies) require that purchases be made through established channels, the reasons being: (1) to make sure the need for materials is legitimate, (2) to prevent graft and (3) to secure the lowest prices through centralized purchasing and competitive bidding. So the superintendent, instead of buying a shovel, fills out a requisition. This is okayed by his superior, and perhaps by certain other officers, and sent to the purchasing agent of the agency, who buys the shovel. All these steps, and the consequent executive moves, take time and cost money. Whether the net result is a gain or a loss is hard to estimate. But it is certain that the advantages of centralized purchasing will be maximized if the purchasing system operates with a minimum of executive moves.

Executive planning must strike a balance between two conflicting forces. One is that of centralization—the insistence by the center of execution that all traffic between subordinate units be reviewed, concentration of decision-making authority, and repression of independence in individual workers. The other is that of disintegration—the frustration of control by subordinates, and disregard of administrative policy. Staff officers will normally exhibit the first tendency, line officers the second. Highly centralized executive control will necessitate many moves; a decentralized one will have relatively few.

In the executive procedure for performing any job,

there will be found two kinds of operations. The first type are functional steps, or the actual doing of the work. These include research, drawing up plans, ordering things to be done, managing physical work, handling supplies, and disbursing funds. Yet this kind of work can not normally be carried on without certain operations of another kind, the control steps. These include reviewing of research and plans, giving executive approval for the putting into operation of plans, okaying the purchase of supplies and the paying out of money, and the whole process of executive reporting. It is important to distinguish between these two kinds of steps, especially if it is desired to simplify a procedure. You cannot eliminate functional steps: they are the work itself. You can only consolidate, simplify or alter them without changing the nature of the result. You can eliminate control steps. The question is, how far you should go in this direction.

It is important to avoid overcontrol of subordinates, as unnecessary control steps are expensive and hamper the work. Each executive must have discretion to deal adequately with the unstandardized problems he meets. Yet the reconciliation of this independence with the necessary degree of control for securing conformity with objectives is difficult, particularly in large organizations. George H. Shepard suggests that the necessity of control apparatus increases as a power of the size of an organization.[2] To follow this reasoning through, it would appear that there is an optimum size for executive offices, beyond which it is unprofitable to expand.

For example, a given office is divided into five units each of which handles a certain procedure which is repeated from time to time. Business grows, and the office expands to four times its size. Each function performed by a unit is split into four subfunctions, and subunits are set up to correspond. In the original set-up there were five chances of error, one in each unit. After expansion there are twenty chances of error, one for each subunit. But as the volume of business has increased fourfold, the actual numbers of errors made (and hence the necessity for control) is sixteen times what it was originally. This example should not be taken too literally, but it does illustrate a tendency observable in most large organizations. The executive planner must relate the number of control steps to the size of his agency; if the office grows so large as to be unwieldy he should do what he can to split it up into functional or regional units.

2 Shepard, George H. "The Problem of a Planned Economic Order," *Bulletin of the Taylor Society and of The Society of Industrial Engineers*, November, 1934, pages 22-28.

Control steps are justified only if they save their cost by preventing error. A given office is losing a thousand dollars a month through errors in a certain procedure. A control step is introduced which catches half the errors, saving five hundred dollars. The cost of this step is two hundred dollars, the net gain is three hundred dollars. A second control step is set up, of similar cost and effectiveness. Since it catches half of five hundred dollars worth of errors, the gain here is fifty dollars. All other things being equal, the two control steps are justified, but the introduction of a third similar step, which would catch only a hundred and twenty-five dollars worth of errors, would cause a net loss of seventy-five dollars. This third step, following the language of economists, may be called the marginal control step. An office which persists in introducing control steps beyond the marginal point may be justly accused of creating red tape.

The Planner

We have indicated a few general tendencies with which the executive planner must deal. We may now say something about the planner himself, and the way in which he should go about his job. A large organization would do well to have a permanent executive planner as a staff assistant to the president or chief executive. A small office could employ one on a professional basis. The function of executive planning is separate from, although related to, direction. The administrator outlines the broad policies of his organization, and is responsible for them to the stockholders or to the public. He decides what shall be done, and sets the limits for activities. The planning or re-planning of the administrative set-up of the organization should be carried on jointly by the executive, the planner, and the personnel director, because the set-up must have reference to: (1) the purposes of the organization, broken down into functions; (2) the order in which things are to be done, and (3) the available personnel for doing them. Rough planning of basic procedures for principal executive functions should precede the final drafting of the organizational set-up. After a tentative organization is created, the executive planner should plot out the various procedures contemplated, in graphic form if possible, and should calculate the number and distance of executive moves, and the operative and control steps. From here on, the planning of organization and that of procedure are parallel functions closely related to each other. They must dovetail as fully as possible.

Executive planning is not just a preliminary func-

tion. It continues while an organization is in operation. The executive planner sees how the procedures he has worked out on paper are actually functioning. He uses the practical experience of workers to make improvements both in organization and in procedure. The function of executive planning has been recognized by certain bureaus in the Federal Government which have set up procedure divisions. This is a forward step, yet these divisions have not as a whole been permitted to practise scientific planning.

In order to reduce planning to practical terms it is necessary to set up various work units so as to obtain exactness and provide a means of measuring results. In most mechanical work there are natural units, such as the piece or the pound. But the executive planner must create his own units. It is significant that several government agencies have already seen the need for units in executive work. The United States Forest Service, which has an elaborate and useful mechanism for measuring its own efficiency, has developed work units for its functions. Each of its projects is broken down into standardized "job" units, to which standards of cost and accomplishment are applied, thus permitting comparisons on a concrete basis. The Bureau of the Census and the Farm Credit Administration have similar systems of units. But the non-uniformity of executive work requires that units be set up in terms of each separate function, and the best which the chief can do is to reduce them to a common denominator, such as the man-hour.

The need for a common denominator in measuring work becomes at once apparent when the planner works out operating schedules, not for each job *in vacuo*, but for each job as it affects and is affected by other jobs. That the man-hour is the best common denominator is evident, because the working relations between executive jobs are nearly always *time* relations. Each of the several or several hundred jobs being done by an office must be synchronized if costly delay is to be avoided. Each task must have a definite performance time, and an equivalent amount of work-time must be set aside for it. The question arises: how are the time requirements of executive tasks to be measured? The answer would seem to be, in general, to have executive and professional workers make their own time measurements and to use the techniques developed by scientific office managers for clerical work.[3] With such information as he can gather, the planner should be able to make a rough time-table for each job or type of job. Such a time-table would be quite tentative at first, and plenty of "leeway" should be allowed for unforeseen delays. But in the course of experience, particularly in recurrent operations, it should be possible to make fairly accurate estimates of time requirements for the various tasks.

[3] For methods of timing clerical work, *see* Leffingwell, William H., "Office Management," A. W. Shaw Co., Chicago, 1925.

The Time Factor

It takes some trouble to make time-tables for executive procedures, and it is certain that such time-tables are bound to be far from perfect. It may be asked, is timing worth while? The answer would appear to be yes, for the reason that much "red-tape" is caused by the uneven flow of work—the "swamping" of key officials at certain times, and the intermediate periods when they may have nothing to do. Some attempt must be made to avoid traffic jams, and this can only be done by timing the work so that each job will come to a worker when he has time available for doing his task. The timing of executive work is necessary for the same reason that the timing of railroad trains is essential—to provide the physical means of keeping traffic moving.

To put it another way, timing is necessary in order to minimize the third factor of motion delay—the time elapsed between the delivery of a job to an official and his "getting around to it." An officer usually puts new business at the bottom of his pile of papers and it is some time before it gets to the top of the pile. This pile of papers may be called his "backlog." It is necessary for each employe in an executive circuit to have a certain backlog so that he will be kept busy. The backlog is the slack which allows for variations in operating speed.

The planner must recognize that the money cost of administration is not the sole index of efficiency. It is possible to change procedure so as to reduce money costs, and yet make that procedure less efficient and more time-consuming. This paradox may occur through the coming into existence of backlogs at various steps.

A simple example of this effect is presented here. Let us suppose that a certain procedure involves five steps which are done by the officials indicated, require time for performance, and cost amounts as shown by table on page 115.

This procedure is initiated by A on an average of five times per week. Accordingly, steps two and four take up eleven hours and fifteen minutes of B's work week. He will have other duties, and thus we may assume that his backlog averages three hours of work. (From here on backlog will be expressed in terms of

Step	Time hours	Time minutes	Done by	Per Annum	Cost
1	1	0	A	$3,000	$1.50
2	0	30	B	2,000	.50
3	4	0	C	1,600	3.20
4	1	45	B	2,000	1.75
5	2	0	D	6,000	6.00
transit	1	0			.50
	10	15			$13.45

(Note:—per annum refers to the annual salaries of the several employes performing this job. The cost of executive work, on the basis of a thirty-nine-hour work week, is fifty cents per hour per $1,000 salary.)

time.) C is a clerk whose main duty consists of performing step three in this routine, and who does not have a backlog. D is an important executive, whose backlog averages six hours, and sometimes runs as high as twelve. Since this procedure passes twice over B's desk (we shall assume that it has no priority over other routines) we must add a total backlog time of twelve hours to the actual working time. Thus if A starts this procedure at 9:00 A.M. on Monday, D will have finished it by 10:30 A.M. on Thursday.

Suppose now that we turn loose on this procedure an efficiency man with an itch for functionalization. It is decided that clerk C does not have enough work to do. His job is abolished and step three becomes two steps, 3a and 3b, done by the central statistical and stenographic bureaus respectively. It is found that most of step four can be done by a clerk receiving less than B's salary of $2,000, so this step is divided into 4a and 4b. A similar change divides step five. The result is a slight theoretical saving in time and a considerable saving in cost, as follows:

Step	Time hours	Time minutes	Done by	Per Annum	Cost	
1	1	0	A	$3,000	$1.50	
2	0	30	B	2,000	.50	
3a	1	45	E	1,400	1.23	2.28
3b	1	30	F	1,400	1.05	
4a	1	15	G	1,600	1.00	1.50
4b	0	30	B	2,000	.50	
5a	1	15	G	1,600	1.00	3.25
5b	0	45	D	6,000	2.25	
transit	1	15			.62	
	9	45			$9.65	

All of which looks like a triumph for the efficiency man.

But the increased number of steps will produce increased backlog. Step three originally had no backlog. Both steps 3a and 3b will involve backlog, both in routing (since they must be assigned by the heads of the statistical and stenographic bureaus, each of which has his own backlog) and in performance, since they are done by persons who do not specialize in this particular routine. For each of these steps we may allow thirty minutes routing backlog and two hours operating backlog. Steps 4a and 5a together require only twelve-and-a-half hours of clerk G's work week, so he may be expected to have a backlog of two hours because of other work. The backlog for steps 4b and 5b is the same as that for the old steps four and five. The total backlog time is now twenty-one hours, so that under the new routine the procedure, instead of being finished on Thursday at 10:30 A.M., is completed Friday at 12:30 P.M. It may be that there is no particular reason why the extra delay should not be incurred to save $3.80. Or it may be that urgency justifies continuing the expense. But in any case, the routine should not be changed without calculating the factor of backlog (plus additional motion delay) and weighing the desirabilities of maximum speed and maximum economy.

Backlog is due to several causes. One is that the employe has more work than he can do, in which case it grows steadily until part of his duties are removed. The second is that sometime in the past the employe's work has been held up for a while, and since then has come in at about the speed at which he performs it. The third and most common cause is that the work comes in batches, in which case the backlog fluctuates. The planner can save money and increase efficiency by taking steps to control the flow of business. Since the essence of work in an executive department is variability, such control can at best be only partially successful.

The Quality Factor

The planner must also determine the "quality" and "functionality" of steps. This is an analytical operation which precedes final assignment. The "quality" of a task is a summing up of the answers to three questions:

(1) How necessary is the task? How important?

(2) How bad would be the consequences of its not being done properly?

(3) What degree of skill and experience are required for doing it?

The Functional Factor

The functional character of executive steps, or their "functionality" indicates the general type of work they

represent, as distinguished from their "quality." Functionality indicates, for example, whether a task consists of finding facts (research), making decisions (executive), or adding up figures (accounting). Quality shows whether the research, executive work, or accounting, as the case may be, is of high or low grade. Qualitative and functional analysis is necessary both for correct assignment of tasks and for the proper placing of workers in the organizational framework.

Functional analysis of projects should not be carried on by the planner without close co-operation with the executive. The reason is that functionality is often determined to a large extent by factors peculiar to the specific field. The executive is normally a practitioner who has risen from the ranks, whereas the planner is—at least ideally—an expert *per se*. But the locating within the organization of each kind of worker is an activity of the executive planner. It is important because it affects the motion delay attendant upon each step.

Some efficiency engineers have made a fine point of "functionalizing" office work. It is even advocated as a "cure-all" for bureaucratic diseases. But the lumping of all the work of each functional character within a single unit does not appear to be successful in executive work, for the reason that the exactness of timing which is necessary for efficient functionalization is not obtainable, nor is there sufficient standardization of jobs. Functionalization requires a greatly increased number of contacts and transfers of work, and hence, in executive work leads to excessive motion delay. Yet its proponents make a good case. They point out that it eliminates waste time in slack periods, thus permitting a reduction in the number of employes. They also claim that it gives improved flexibility. Perhaps these objectives might be attained by a limited functionalization, using the following devices:

(1) Having the personnel of each unit of a size able to handle the normal flow of work. Taking care of peak loads by the use of a reserve force or "pool" of clerks, statisticians, research workers and technicians, who could be assigned *ad hoc* by the planner.

(2) Establishing a personnel transfer office, by which units where work was slack could lend employes to other units which had peak loads. It would have to be understood that by expressing willingness to lend employes the unit would not be jeopardizing its security of tenure.

This arrangement would not sacrifice the integrity of line units, nor cause any executive motion in connection with the progress of major jobs. It would perhaps accomplish to some extent the objective of functionalization without involving the attendant complexity of organization.

The planner must take great care to avoid the unintentional creation of "executive bottlenecks." An executive bottleneck is like a highway bottleneck. It is a point where a number of streams of traffic must go through a single passage. If there is more traffic than the bottleneck can handle, a traffic jam will be created which may stall an entire organization. The most usual cause of bottlenecks is undue centralization of authority, and the setting up of submarginal controls. If the head of a large division insists on personally signing every letter which goes out from that division, he will create a bottleneck on his own desk. If a wide variety of matters must be submitted to a small "control" unit, congestion will result. It is also possible for bottlenecks to result from over-functionalization, particularly in fiscal control. In general, the planner can avoid bottlenecks by planning control functions with reference to the following points:

(1) Their necessity—their cost, and the losses they avoid.

(2) The time they require.

(3) Their distribution in view of the quantitative capacity of the officials who perform them.

Executive planning requires the routing of jobs to operating units at times when they are best able to perform them. Synchronization of work is only possible on the basis of up-to-date knowledge of the productive capacity and work load of each unit. The planner should obtain from each unit a standardized production chart, filled out regularly for an ensuing production period, say a week. Such a chart should show the capacity of each unit in terms of production hours (man-hours) in each functional classification, and on it the unit head should enter the work which he has on hand or expects to receive. It seems reasonable to expect that a unit head should know how much work he has on hand and how long it will take to get it done, and that he should be able to impart this information in tangible form. The use of production measurement and control will not succeed, however, unless there is in effect an "efficiency rating" system which will guarantee security to the most capable workers. The connection between the abolition of a position and the discharge of its incumbent must be severed, so that no employe will feel the compulsion to "appear busy."

If the method of procedural control suggested here is

practised too minutely, it will defeat its own purpose. The planner should not try to regulate the assignment of work within units. This is the duty of unit heads. The planner should, however, be kept informed of the volume of intra-unit work so that he may allow for it in planning inter-unit procedures. He must, at all times, practise consummate diplomacy in his relations with unit heads. He should avoid "laying down the law" to them. The success of executive planning depends far more on the co-operation of all officials than it does on the omniscience of a procedural dictator.

Conclusion

To sum up, the several basic principles of executive planning may be stated as follows:

(1) Executive planning is not deciding *what* is to be done. It is deciding *how* it is to be done. It is the dividing up of jobs into tasks, the assignment of tasks, and the regulation of the flow of business.

(2) The first step in planning for an executive job is to analyze it to be sure of the objective, and then to divide the job into individual tasks. Each task must be rigorously defined in quantitative, qualitative, and functional terms.

(3) Executive work should be timed.

(4) Each transfer of an executive project is a move and takes time. A move within a unit takes a little time; a move between units takes more time. There should be as few and as small executive moves as possible.

(5) Each employe has a "backlog" of work. This must be taken into account when estimating time required for a task.

(6) The organization set-up should be planned to suit the jobs to be done—not the other way around.

(7) Extreme "functionalization," that is, putting the workers in each functional classification in a single unit, is not practical. Jobs should travel between units as little as possible.

(8) Executive action should be decentralized. The fewer rules and regulations the better.

(9) When an official or unit gets a greater work load than can be performed with reasonable promptness, an "executive bottleneck" results which may tie up the whole organization.

(10) The planner must have available constant knowledge of the work load of each unit so that he may make assignments which will be carried out on time.

The introduction of scientific executive planning will not automatically make an inefficient organization efficient. But it does provide for the most efficient division and distribution of work. It is not intended to guarantee the quality of work or its conformity with policy. It is the duty of units to perform their work properly, and of the executive—not the planner—to judge its quality and recommend improvements. There is no way of getting around the fact that to have good work done you must have capable people to do it, and an able executive to check up on them. No amount of planning will compensate for incompetent personnel. What it will do is to help competent personnel to do their work as efficiently as possible.

Reorganizing to Prevent Losses

(Continued from page 100)

they are going to stand with various plans. It gives the management a set of pictures from which to choose.

To the extent that the management of a company can be led into adopting such procedures as have been outlined above, will it avoid getting into financial difficulties. By the adoption of a constructive plan of criticism of its program of operations, it is possible to improve the financial picture of a company's future and thus prevent a serious outcome. But this must be done before the company's funds are too far depleted.

Modern Purchasing[1]

By CARLETON REYNELL
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As it is practiced today, purchasing is a specialized occupation requiring technical training in many cases.

A BANKER, addressing a group of technical men at a convention, defined an engineer as a man who spent weeks in working out a most involved mathematical problem until he got the correct answer to seven decimal places, and then multiplied it by five as a factor of safety. I have also heard purchasing agents called a lot of things, many of them not fit to print, and a few years ago most of the lurid persiflage which was directed at him was deserved because a hard heart and glassy eye were prime requisites for a member of the purchasing profession.

But today with the intricate system of production, distribution, and specialized marketing developed in our country, a new type of individual is demanded to cope with the rapidly increasing technical advances and manufacturing methods, and the developments of new products. Fifteen years ago the National Association of Purchasing Agents with nearly four thousand members had but two engineers in the Metropolitan New York Chapter. Today with a membership of three hundred in New York, one third are technically trained and nearly one half of the membership are university graduates with various degrees. Several colleges have included purchasing courses in their graduate schools, and the Harvard Graduate School of Business last year started an advanced school of purchasing for executives.

Modern purchasing requires a fundamental knowledge not only of the products of our own manufacturer, but the products of our vendors, and an up-to-date knowledge of developments throughout our suppliers' industries. Specialists in electrical, textile, metallurgical, agricultural, structural and many other branches are required. A few years ago I was convinced that it was essential for the purchasing agent of a manufacturing company to be technically trained. Now I am not sure that that is sufficient. Courses in accounting and finance are extremely valuable in purchasing work, and more recent legislation requires that he should also be a lawyer, or have a good one at his elbow to keep him out of difficulties.

I am not going to bore you by recanting any of the tremendous amount of detail essential in buying practice. This detail, such as terms of payment, methods of shipment, vendors' ability to produce, contract clauses, etc., is routine for the experienced buyer. Mr. Edward Gushee, Vice-President in charge of purchases of the Detroit-Edison Company, has listed one hundred forty items which must be considered or acted upon in issuing a representative number of purchase orders. Most of these items are not even thought of by the engineer or executive who casually orders something, and without warning dumps it in to his Purchasing Department to confirm. Such procedure, unless a purchasing agent is present at the time of closing an order, practically always involves extra work and loss of time, and generally loss of money.

An engineer, whether he be part of the engineering or production department, can neither be expected to be expert in the ramifications of efficient buying, nor has he the time to devote to them. If he does give his time to this he is neglecting his own job of designing, improving, or producing his company's products. But he should fully realize the value of efficient expenditure of his company's money, and the methods by which this can be accomplished. The duty of the Purchasing Department is to keep the Engineering Department advised constantly of the factors which make for this efficient buying; markets, quantity discounts, manufacturing processes, trade agreements, and hundreds of items which are constantly changing and affect manufacturing costs.

In practically every manufacturing company the money spent in purchases exclusive of such services as insurance, freight, telephone, etc., can be divided into three distinct classes each of which should be treated differently from a buying standpoint. These classes are:

1. Permanent, or Capital Equipment.
2. Maintenance and Manufacturing Supplies.

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1 Presented at a meeting of the Northern New Jersey Chapter of The Society for the Advancement of Management, April 8, 1937.

3. Purchases for materials to become a part of goods manufactured.

A discussion of any one of these groups, or indeed, any item in one of these groups could easily be the subject of a separate paper. The best we can do tonight is to touch a few important items of each group.

We include in group 1, special manufacturing machinery of all kinds; boilers, turbines, motors, generators, pumps, engines, cranes, conveyors, etc., and machine tools. There has been in the last fifteen years a growing tendency to purchase auxiliary plant equipment on the efficiency basis. More and more we see an actual money valuation announced by the buyer for a percentage of performance he desires. The governmental departments, such as the Navy, and large project commissions, and Public Utilities in particular, have adopted this valuation system of buying equipment. I have long been an advocate of this method as the only sound basis for buying mechanical equipment and machinery, but I have noticed that in recent years the pendulum in many cases has swung to a ridiculously high point in evaluating such efficiency, resulting in an inflated evaluation entirely out of line with the initial cost. For instance, I recently noticed a specification which announced that 1 per cent in operating efficiency on a machine which cost $5,000 would be evaluated at $1,000 in comparing bids.

This particular transaction worked out so that the successful bidder might be 100 per cent high in his original price and still be awarded the contract, in which event fixed charges on the purchase price would overcome any annual savings which the efficiency might gain.

It is possible and essential in good practice to work out a formula arriving at a sound cost for evaluating mechanical or electrical efficiency. For instance, the yearly cost of operating a piece of electrically driven apparatus, exclusive of labor, repairs, and fixed charges, is as follows:

$$\frac{P \times .746 \times 8760 \times L \times C}{E} = \text{Yearly Operating Cost.}$$

WHERE—

P = Average output horsepower.
.746 = Factor to reduce to Kilowatts.
8760 = Number of hours in a year.
L = Load Factor (percentage of use during year)
C = Cost of electrical energy per K.W.H. in dollars.
E = Overall efficiency.

By means of this formula we can evaluate the bids received from various manufacturers after they are received. But the best way to do this, and one becoming more popular is to arrive at an evaluation figure before asking for bids so that the machinery manufacturer has a complete picture of what is required, and can select apparatus best suited to the job. Obviously efficiency is not of as much importance or value to us if we are only using the apparatus 30 per cent of the time as it would be if we were using it 50 per cent or 75 per cent or more. Obviously also, the efficiency is of less value if our energy costs eight mills per KWH than it will be if it costs two cents per KWH. Therefore, the value of efficiency depends on the load factor of the machine, the cost of electrical energy, and the average power requirements of the unit.

After some study of this subject, and an analysis of actual bids received, we have worked out the following empirical formula for efficiency evaluation. The value of 1 per cent of efficiency per year equals twelve times the cost of energy per KWH in dollars times the average output Kilowatt times the load factor, or 12 x C x P x .746 x L.

Let us take a simple example. We want to buy a 400 H.P. synchronous motor. Let us assume that we expect to use it three quarters of the time, and that our power cost is 1.5 cents per Kilowatt hour. The yearly cost to us of 1 per cent in efficiency is then,

$$12 \times 400 \times .746 \times .015 \times .75 = \$40.28$$

Now what is that worth in the price you pay for the motor? It is worth the same as the capital cost of any other piece of plant and equipment in the same ratio of fixed charges to capital. Such fixed charges are usually made up of:

Interest—Rentals
Depreciation, or Amortization
Taxes
Insurance

If we assume that:

Interest and Depreciation = 8%
Taxes and Insurance = 2%
Then Fixed Charges = 10%

This total, of course, depends on money rates, actual taxes and insurance costs, but, assuming 10 per cent for easy figuring:

Total Initial Cost Value of 1% of Efficiency $= \frac{40.285}{.10} = \$402.85$

This is the amount we can afford to pay initially for 1 per cent better efficiency no matter what purchase price is quoted.

A similar formula can be worked out for steam driven equipment and the Brooklyn Edison Company has worked out curves from their formulae for evaluating bids for boilers, condensers, and many other auxiliaries.

The purchase of machine tools involves, of course, a study of the individual requirements of these tools. The tendency in all tools today is for higher production. The lathes, planers, grinders, boring mills, etc., designed for standard machining have met these high speed requirements and practically all the good manufacturers can turn out machines to handle standard work at a lower cost than a few years ago. I have noticed, however, that when tools are designed for special machines at high speeds, it is better to let the manufacturer work the bugs out of the tool before it is delivered rather than put a large burden of breakdown losses in your own shop after the tool is installed. We are today too prone to cry for quick delivery on a tool no matter how special it may be and then bark at the manufacturer if something goes wrong after operation starts. It seems to me that the automobile industry is going at this in a better way. I saw a number of automobile cylinders in a machine tool plant recently being planed on two sides at once on a broaching machine. This will eventually save a great deal of production time, but they are working it out in the machine tool plant before they attempt to put the method into production.

Buying maintenance and plant supplies is largely a matter of experience and trial, and the matter of trial and test is one to be carefully considered. We recently made a test of grinding wheels which cost about five hundred dollars. Shortly after the test was completed, and as a result, a certain make of wheel standardized, another manufacturer came in with a new type wheel which another company had adopted and on which they were saving money. What of it? After computing the savings effected (less than one hundred dollars a year) we found we would be ahead of the game by running our present wheels for five years with no further tests, by which time probably both types of wheels will be obsolete, or the material to be ground changed.

In general it is usually found that the price has no bearing on the cost of maintenance materials and shop supplies. Paint is often an important item of maintenance cost. Some large corporations have consultants to draw up paint specifications for them, but the majority of us cannot afford to do this. I know of one purchasing agent who has many plants scattered around this part of the country. He spent about a month in a laboratory with two paint companies to learn something about paint and its ingredients. As a result he has saved his company many thousands of dollars over a period of years. In buying paint it is well to remember that the labor per square foot of application costs more than the paint itself. The amount of coverage per gallon and durability are the most important factors of cost. About ten years ago my company standardized an aluminum paint for shop interiors, but the cheap carrier used originally for the aluminum started to turn yellow in about a year, and we decided to experiment. Careful costs of application per square yard were kept and the sample interior watched for over a year before final decision was made. Aluminum paint can be purchased anywhere from about 65c to $2.50 a gallon, and we have finally adopted a grade at about the average of these prices as the most economical.

And so it goes with most supplies. The price we pay for them is not the ultimate measure of cost. The chief executive of a large company once said to me, "When my Purchasing Agent gets a requisition for drill steel, I don't care a damn what he pays for it. What I want is the most number of holes our dollar can buy."

Doubtless the greatest amount of money spent per year by most manufacturing industries is for purchases to become part of goods manufactured and re-sold. Some of us spend more money for purchase materials than we do for our payroll, and success or failure in these days of keen competition means producing at the lowest possible cost and necessitates educated buying.

I eliminate from this discussion the buyer who specializes in raw materials because each one of these is a problem in itself, involving quality, quantities, and most of all, markets. No two industries have the same problem in this respect.

But the other class of purchases for goods re-sold interests most of us and should be a subject of constant watchfulness on the part of the designing and engineering departments, and an efficient purchasing department. This class includes the purchase of fabricated or semi-fabricated materials, and parts which go to make up our finished products. I have heard it said that in these days of a tendency toward fixed prices, "We don't need a purchasing agent, all the prices are the same." Nonsense! The problem is greater than ever, and if we are going to save money the purchasing problem should be studied closer than ever before in our history.

Suppose you are going to build a new machine fix-

ture, or any kind of a gadget that must be sold within a price. The questions to be decided are:

1. What is going to be the design?
2. What are we going to build it of?
3. What quantities are we going to buy?
4. Are we going to manufacture the parts or buy them?

These questions are all interdependent, and the first, "What is the design going to be?" cannot be finally decided until at least two of the other three are settled.

For instance, if you are going to use steel in the construction I commend to your attention "Uniform Extras and Deductions for the Products of the Iron and Steel Industry." There was a book of this title first published when the code started under N. R. A., but for obvious reasons it was abandoned as an institute publication after the code ceased to exist. However, it can now be obtained from any steel company in slightly different form, and for some unaccountable reason all the prices of extras are identical. It contains all of the standard price extras for thickness, width, length, hardness, chemical additions, cutting, bending, in fact, everything you can do with steel in any form, from sheets, bars, plates, shapes, and tubes to bolts and nuts and barb wire fences. Admittedly the base price of any steel product from any company is the same, but if your new product has steel in its construction, don't call its design final until you have sat down with your purchasing agent, studied these extras, and if you can get the same physical qualities for a cheaper chemical analysis, get it. If it is an alloy steel the prices and standards of the Chemical Foundations govern, and these often vary widely in price due to the different chemical structures of various alloys. Sometimes cheaper metal is much more suited to our needs than the more expensive mixtures.

Then figure the best quantity to buy from the quantity differentials consistent with your product and turnover requirements, and order in those quantities. I once found a buyer filling requisitions from the engineering department for piston rings in lots of twenty-four because they were building a six-cylinder engine with four piston rings per cylinder. A standard package of piston rings contains twenty-five rings, and he could have bought a standard package cheaper than he could buy twenty-four rings and still have an extra ring. That fellow is not a purchasing agent any more.

The same type of schedule is issued by the brass industry for all fabricated materials in various brasses and bronzes. Similar schedules are issued for various other metal products.

A few years ago a friend of mine said that he had recently been elected to the Board of Directors of a company which manufactured a product built largely of Monel Metal Plate. He asked me to look into their monel metal buying methods because it was the largest item of expense, and neither he nor any of the officers of the company seemed to know much about buying it. However, a few minutes investigation developed that they were buying standard sheets from warehouse stock, and cutting them to sizes to meet their needs. This method naturally made for smaller quantities at higher prices and great waste in cutting. I suggested that their engineers and purchasing department get together with the plate manufacturers and talk over the standardization of their plate sizes and thicknesses, allowing for a rolling to sizes which would eliminate as much waste as possible, and also order in quantities assuring a three or four months supply to allow the rolling mill to reach its lowest production cost. As a result of this study that company saved in the neighborhood of $50,000. a year in monel metal alone.

Before final design is adopted, it is well to check it for simplicity of manufacture. For instance, it is a good rule in machine design involving castings to call in the foundry man for his suggestions as to what can be done with the design to cut foundry cost. I remember in one instance a number of cores in a steel casting were cut from twelve to eight resulting in lower price per pound. Thickness of metal, changing or adding fillets which in no way affect the operation of the finished machine, but materially affect the initial cost, can be suggested by the foundry before the drawing is off the board.

And speaking of castings I consider it the duty of the purchasing department, if they are buying castings, to have the shop keep a complete record of machine work and cost on castings which are rejected due to defects discovered after partial machining. This sometimes runs into astounding losses especially in steel castings, and an investigation usually develops that either the source of supply or the design should be changed to correspond to better foundry practice. Such an investigation recently showed us that it was ultimately cheaper to drop forge certain parts. The investment in dies was higher, cost of forgings was higher than castings but lower machining costs and minimized losses by far offset the higher price in the rough, and have resulted in a better product at a cheaper cost.

Too much cannot be said on the adoption of standard specifications whenever possible. The standard of the various engineering societies and government bureaus cover a multitude of materials and can be easily obtained. If, for any reason, one of these specifications cannot be used, a specification should be written and submitted to various manufacturers for their comments and suggestions before final adoption. General Motors, General Electric Company, The Detroit-Edison Company are a few of the companies whose specification committees never adopt a final specification unless it is sent to their vendors by the purchasing department for opinions as to its commercial soundness.

Let us say we have finally decided that our design is the best we can determine it to be, and it is economical and suited to do the work it was intended. Now we should determine whether or not we are going to make certain of the parts or buy them. It is safe to say that about 50 per cent of the industrial companies today are manufacturing parts that they should buy outside. Of course, if we already have an investment in tools for other purposes which can be used for manufacturing some of these parts we can often help carry the burden of these tools by manufacturing ourselves.

But in general, if we cannot produce long runs of the same item to insure lower unit cost, or we must make an investment in new machinery which cannot operate at least 80 per cent of the time, we will find that it is cheaper to buy from the manufacturer who specializes in that particular item. Some years ago we made our own studs in one of our plants. We had modern automatic screw machines, and really started this manufacture to insure use of the correct thread gauge, particularly on many specials that we had in those days. We found that on runs of two thousand or better we could beat the market price of studs, but as the majority of our size requirements were in runs of two hundred and sometimes less, the whole operation was expensive. A year or so ago we moved that plant and left the automatics behind, and after reviewing our whole stud program, changed about 90 per cent of it to standard threads resulting in a considerable annual saving.

Another manufacturer's problems may be different from the ones I have cited. Their development may start in the research laboratory rather than in the design or engineering departments. But essentially the purchasing problem is the same,—an intensive study of materials purchased before final design is decided on to insure the manufacture of the best product at the lowest cost. Only the closest co-operation between the engineering, manufacturing, and production departments can produce these results.

Personnel Relations in Hotel Management

(Continued from page 103)

the employes. This is marked by greater cheerfulness, more friendliness and improved effort in the service rendered by the individual employes.

Our next tangible step is a job analysis. Every job in the organization is to be analyzed. Requirements will be set up for every job. These requirements will be agreed upon by the department heads and the management with the advice of the employes' steering committee. Standard rates, standard progression of rates and standards of promotion will be set up and these things are going to be done by the management hand in hand with the employe committee.

Our directors believe that eventually personnel and labor relations are going to be the biggest job of management and they believe that the ultimate success of this job depends largely on the co-operation which management will merit and receive from the employes, and on the amount of information which the employes have regarding the problems of the organization and of the industry of which it is a part.

I do not feel that our program is a particularly unique program when compared with the general standards which have been established so far for personnel administration in industry. I do believe, however, that our hotel is unique in that it has any personnel program or policy at all.

The Manager and the Employe in Consumer Co-operative Organizations[1]

By H. V. NURMI
General Manager, Central Co-operative Wholesale, Superior, Wisconsin

Working as a manager or as a rank-and-file employe in a co-operative enterprise requires a special group of qualifications and offers a different kind of reward.

ANY form of co-operative management involves team work. When a co-operative management committee is chosen by the membership or the board of directors, individuals who understand business problems and who are known to be sincere co-operators are usually appointed. The management committee or the board of directors in turn may elect a manager to serve the organization, but the committee and board members are still held responsible for the actions of the manager, and, therefore, they must use good judgment in making their selection. The membership is entitled to feel satisfied that the affairs of the organization are conducted in accordance with co-operative ideals and the approved rules and regulations. Furthermore, the shareholders like to be assured that the operations will be carried out efficiently and profitably. Hence, the prospective candidate for the manager's position is required to have administrative ability and business experience.

Managament Requirements and Qualifications Defined

The management requirements in co-operative organizations can be classified into three main divisions, namely: Knowledge of co-operation; business ability, and character qualifications.

A thorough knowledge of co-operation is the basic requirement, and must, therefore, receive first consideration. It is imperative that a co-operative manager be familiar with the history, principles, and aims of the Co-operative movement, as well as the general Labor movement. A comprehensive understanding of economics and the development of the present system of society is essential in that respect. The manager should keep in mind that the Co-operative movement aims to raise the moral, cultural and economic standards of the working class.

Democracy should prevail in our movement; no employe or class of employes should usurp rights which properly belong to the rank-and-file membership. The co-operative manager, therefore, should not assume too much power as this weakens the organization structure and is contrary to the whole co-operative idea.

The business ability of a co-operative manager calls for a broad general education. Besides, he should have a wide experience in merchandising, that is, in buying and selling of goods. In addition to merchandising knowledge, he is required to possess executive ability, initiative, and organizational skill. A person who lacks initiative will never make a good manager.

The manager must analyze the business he is to guide; and he should make a special study of the accounting methods best suited for that particular organization. For this reason, as well as to keep himself and others posted about the progress the association is making, it is important for a co-operative manager to have a thorough training in accounting.

The manager of a co-operative business is required to outline carefully the policies and direct all forces that make for a larger and better organization. He cannot, however, give too much time to small details, especially when the volume of business is sufficiently large to permit hiring of department heads and other capable assistants.

The manager's duty is to co-ordinate the actions of the department heads, foremen and other responsible employes. Should the manager fail in this important task, sooner or later it means confusion, reducing the efficiency of the entire force.

Co-operative managers are expected to effect buying economies by concentrating their purchases through their central organizations. Whenever they wilfully

[1] Adapted from a paper read to the Co-operative Congress, Columbus, Ohio, October 9, 1936.

support competing private businesses, they are making themselves subject to severe criticism. How can a manager ask the membership of his organization to display loyalty, when he does not demonstrate it himself?

In reference to production managers, it is generally agreed that the most successful production manager is the one who knows all the processes entering into his particular product. The production manager should not pretend that he does, unless he can prove it to the satisfaction of his employers. He does not necessarily need to supervise every small detail in the scheme of production, but he must know the manufacturing methods to be applied.

The character qualifications of a co-operative manager should be given careful consideration. Above all, he must be honest. Secondly, he should have a winning personality or ability to get along with all types of people and gain their co-operation. The more of the following other traits he possesses, the more likely he is to succeed: Punctuality, good judgment, carefulness, progressiveness, courage, energy, optimism, cheerfulness, decisiveness, thoroughness, sincerity, patience, tact, perseverance, and self-confidence. Good health, sober habits, and happy family relations are also indispensable. A co-operative manager must be cautious in making decisions, prompt, industrious and efficient in his work. He should learn to take orders from the board of directors, as given in the board meetings. The board members, on the other hand, should not interfere with the manager's work outside of the regular meetings.

The co-operative manager ought to possess a sunny disposition, so that he can patiently work with his subordinates, as well as get along with the members and customers of his concern. An ideal co-operative manager must have personality, and he should be able to inspire all those with whom he comes in contact. In addition, it is necessary that he try to educate the other employes in principles of co-operation, and thereby create a co-operative atmosphere in the place he is managing.

The steady grind is what counts in the development of any enterprise. Therefore, the co-operative manager should possess an optimistic frame of mind. This being contagious, he will soon discover that all the other employes also will believe in the future of our great movement. It is desirable for a co-operative manager to always maintain a friendly attitude toward the other employes. He can best command the respect of those who work under him if he mingles with them and listens to their suggestions and complaints. The managers should remember that they, too, are employes, but with added responsibilities. When approached by their fellow employes, the managers are expected to be sympathetic and ready to analyze the underlying motives and problems that the other workers may have at their hearts. One of the essential requirements of a co-operative manager is to know human nature; it will aid him in gaining the good-will of his customers, as well as of the other employes.

History teaches us that when a system of government is created, it develops, changes, expands and contracts. Likewise, the functions of the management will change hand-in-hand with the economic development of the nations; and, therefore, the co-operative manager is required to have vision. His important position should compel him to be keenly interested in the progress of the movement, as well as his own organization.

Service and Employe Relation to the Movement

There are certain aspects of co-operative service and management that every applicant should consider before seeking to serve the movement. The co-operative employes need to study the art of salesmanship and the technique of their particular lines of work. The salesman who can assist his customers by making valuable suggestions is not merely taking away their money. Better service in our co-operative establishments has become more and more essential within the last few years, because competition is not carried on by bargain offers alone, but by service appeal as well. Such service which would have satisfied our patrons a generation ago, will not do today, neither will anticipated savings-returns (rebates) always attract customers, if the service does not compare favorably with that of private competitors.

To stress the importance of better service, I shall quote from a paper prepared for the National Joint Committee for Co-operative Trade and Propaganda by George E. Griffiths and T. W. Mercer, published by the Co-operative Union Limited, Manchester, England:

> Management committees have their responsibilities of course, and it is their duty to provide up-to-date, well-fitted, and attractive shops for assistants to work in; but in the nature of things the actual work of serving and pleasing customers must always be done by the employes who work in the shops (and those who deliver goods to members), and

therefore it is essential that every employe shall understand why he ought to co-operate with the management in improving the service given in the store where he is employed.

We are all democrats now, but democracy, that is equality of social status, has not yet been established in the realms of industry and trade except within the borders of the Co-operative movement. The movement itself is a democracy in business, for *ours is a great democratic partnership, the success of which depends primarily upon the conscious co-operation of every partner.* Members committees, officials, and employes must all work together in the common cause if maximum success is to be secured, and the efforts that others make to secure prosperity must always fail if the employes also do not "pull their full weight" as members of the team.

It is true, of course, that co-operative employes are engaged and paid in the ordinary way, but *the relationship of the employe to the society and to the members who employ him is not the old relation of master and servant.* If he himself is a member of the society, a partner in the business, he is in fact a co-operator who has an opportunity of working for himself and his fellow-members whilst earning his living in serving their common interests. He is more than a hireling, for he is a colleague, and most of the customers whom he serves in the shop are his own neighbours, friends, and acquaintances.

This is a fact worth emphasizing, for when it is rightly understood all can see that the *co-operative employe has a new status, a new importance, a new significance as a worker. He is a worker employed by other workers who are organized as consumers in a co-operative society. He is not working for capitalists eager to make profit out of his labour and the customers who support the business. In truth, he is helping to make industrial democracy possible on a bigger scale, and the more efficient he is as a co-operative employe the more rapidly will the Co-operative movement grow, and the more quickly will other men and women be able to find employment in co-operative service.*

We think it would be a splendid thing for the Co-operative movement, and the workers generally, if every co-operative employe were to recognise that he is a servant of a democracy. We believe that each would then realise his importance as a worker and understand how much depends upon him and the spirit in which he does his work.

Its own astonishing growth and amazing success prove that Co-operation is no longer an experiment, but if industrial democracy is not justified by its superior efficiency in the Co-operative movement it is not likely that all the trade and business of the country will ever be organized and administered in the same way and the same spirit. There is a sense, therefore, in which the co-operative employe is a trustee for all other workers. He has to make industrial democracy possible elsewhere by making it successful in the Co-operative movement, and *perhaps the final test of success and efficiency of the Co-operative movement will be the quality of the service and attention that ordinary customers receive when they make casual purchases in a co-operative store.*

Service Requirements and Developing a Satisfactory Wage Scale

One more important question enters the realm of co-operative management, namely, the acknowledgment of good service in the form of a satisfactory wage scale. The members and customers in our co-operative enterprises usually demand a great deal more from the help than is done by employers in private business. (Very seldom, if ever, is co-operative help, for example, paid for overtime, not mentioning the hours spent in attending meetings and conferences.) Hence, co-operative employes deserve at least the same compensation for their efforts as is paid by our competitors for a similar type of service rendered. The co-operators are not in favor of paying exorbitant salaries to managers and other executives, instead, they are trying to increase the wages of lower paid employes. *A fair living wage to all employes should be the accepted slogan in our co-operative organizations.* Besides, hiring the cheapest help is not always the best policy when the high requirements of co-operative service are considered. Whenever co-operative employes are devoting their own time to improve their occupational abilities, that should be recognized by the boards of directors in the form of a decent wage scale. And, until this principle is more generally put into practice, the co-operative organizations will be retarded in their plans for expansion.

Managers and other help of the co-operative organizations should be paid a straight salary. In certain lines of co-operative business a commission basis has been used, but it isn't preferable. Organized labor, as a rule, has gone on record against hiring help on a commission basis. No doubt, the employes' right to collective bargaining must be adopted on a larger scale in our co-operatives.

A Few Special Management Problems

A multitude of important management questions can be listed under this heading. No one could attempt to give any satisfactory rules in advance for dealing with these special management problems involving human nature, selection and training of employes, improving efficiency, promoting responsible employes, planning cost keeping and budgeting, eliminating waste, controlling purchases and inventories, carrying out labor policies, taking care of aged employes, etc.

The selection of personnel is of utmost importance in considering the development of future operations.

It should be kept in mind that the younger employes are selected with a view of training them for bigger responsibilities. In practically all successful co-operative organizations the hiring of relatives is not permitted, because nepotism creates ill feeling among ambitious workers. On the other hand, we find successful business houses in America in which the choicest possible jobs have gone to executives who are closely related. In co-operative organizations it is well to establish a rigid policy to be followed in hiring executives and other help.

Whether the executives should be obtained from the ranks of own employes, who are well versed in co-operative principles, methods and policies, or hired from the outside, is debatable. Those who believe in the policy of engaging executives and technicians from the outside argue that it supplies the infusion of desired new blood in the organization. Co-operatives in general prefer the policy of promoting their experienced employes.

Should the board of directors or the manager do the hiring and firing? This is a direct question of policy. Arguments may be advanced in favor of either method. Many of the most successful co-operative organizations have established a definite rule that all permanent employes be hired by the board of directors.

Special training schools may bring forth new talent which can be used advantageously in any line of co-operative business. Loyalty may also be developed at such schools, insuring the permanency of our co-operative institutions, not mentioning the ever-important question of improving the technical ability of employes. By training their own help, the co-operative associations will be prepared to overcome sudden changes in personnel, especially when better jobs and more salary are being offered by other employers. Co-operative employes will stick better to their jobs, regardless of tempting offers, if they are well educated in co-operative ideals and trained in every detail of their particular work.

A definite plan should be instituted early for determining when employes are eligible for promotion. Periodic check-ups with foremen and department heads will enable the manager to find out the ones who are ready for bigger responsibilities.

In the future, when co-operative organizations have been in operation for a longer time, there will arise the question of finding jobs for those employes who can no longer carry on with heavy duties. They may be able to fill positions where good judgment is of prime importance, instead of energy and vigor. Perhaps these old-timers are needed in training younger employes for important positions, and they may be delegated to stimulate interest in efficiency, as well as to help those employes who get into a rut.

The managers and boards of directors ought to prepare plans to take care of such co-operative veterans who are too old to work. Large corporations have paved the way in that respect by promoting the idea of pension funds.

Lastly, the co-operative managers and prospective candidates for managers should remember that they have a perfect right to express their thoughts in all membership, board and committee meetings, but as soon as a decision is reached, the managers' personal opinions cease to exist.

REVIEWS

La Technique de l'organisation des Entreprises (The Technique of Organization of Industrial Enterprises) (revised). By Jean Chevalier, Dunod, 92 Rue Bonaparte, Paris, France, 1937, 2 Volumes, pages xix, 418, 63 charts, tables and illustrations.

This publication is offered as an expose of the principles, evolved from the industrialist's art, of the most useful and possible employment of capital and labor.

In his attack upon this presentation Mr. Chevalier opens his work with a politico-economic introduction culminating in a basic formula composed of the five following components: administrative, technical, financial, economic and social.

Under the first heading, "Administration," the organization of any enterprise is defined as "the application of human activities to combine various forces to obtain a predetermined result" and the direction of these activities with an harmonious co-ordination of intelligent efforts. Upon the proper application of the means employed equitably by each class of men, whether leaders or subordinates, depends the nature of the productivity of labor. In brief, administration is summed up as the concurrence of foresight, direction, command, co-ordination and control.

As a support of these five functions, the twelve principles of administration of Fayol are made an adjunct, emphasizing the need of a permanent and intelligent authority of command in whatever grade necessary, whether in a minor or major capacity.

Initiative and responsibility, authority, discipline, order, exactitude, economy, vigilance, equitable treatment of workers, unity of purpose, stability of personnel, subordination to the general interest, and rapidity of execution of tasks are successively dealt with, followed by a concrete explanation of the necessary budgetary function and control.

The function played by well-administered finances is clearly and fully described, taking into consideration every material point, from the inception of the primary need of invested capital to conduct and operate the proposed enterprise, to the methods to be employed, the limitations to the acquisition of the necessary land and buildings, machinery and equipment, and the retention of sufficient capital funds to transform inanimate things of many descriptions into a whole productive center of industrial activity.

This in turn is put in motion by predetermined plans of efficient management which will thus become engaged in the attempted reconstitution of the funds employed for the purpose of creating useful production, betterment of economic conditions and the segregation of profits to the investors after all legitimate expense will have been provided for through the sales of the commodity produced.

A considerable amount of space is devoted to the scientific organization of the various departments such as purchasing, production, marketing, and publicity.

In the economic field, Mr. Chevalier logically expresses himself in giving the definition and purposes of trusts, holding companies, cartels and colonial agencies, wherein a voluminous amount of capital is employed, citing the United States as the land of predilection for the formation of such organizations. Mention is made of similar economic movements having taken place in Germany in 1926, some years thereafter to be partially reduced in strength and power and of others maintained elsewhere in Europe for various purposes, but especially for the development of steel and the allied industries.

Notice is taken of the struggle of the United States Government against trusts in the enactment of the Sherman Law, the formation of the Federal Trade Commission and the passing of the Clayton Act. Reference is also made to certain articles of the Penal Code of France (1926) imposing severe penalty upon offenders engaged in the exercise of agreements whereby extraneous gains were made and the pressure brought to bear upon the market thus affected by the rise and fall of the price of commodities; and in 1935, the attempt made by the Minister of Commerce by the proposed adoption of a law tending to make such agreements temporarily obligatory with a view to remedying the economic position in which the interested parties found their industries. Severe criticism of the measure compelled the Finance Commission to table it.

Mr. Chevalier subsequently offers a comprehensive statement of the possible advantages and disadvantages of these agreements and concludes the first volume of his work by dedicating an entire chapter to the use of safety devices for the protection of the worker.

The second volume is reserved for the history of the efficient organization of labor, amplifying Taylor's principles and methods and stressing the fact that, after all, only satisfactory working conditions should exist to obtain the best results from men whose attitude towards the performance of their respective tasks should be so modeled as to render the effort used as "voluntary and conscious," rather than by dictating and compelling them to produce a certain amount of completed operations. According to Mr. Chevalier, the physical overtaxing of the worker is not only a crime against the individual but also against society for the simple reason that by such error, industry is deprived of the good-will of such men. Therefore, any organization problem must be approached from two points of view, the economic and the physiological.

These two important subjects are dealt with in a lengthy manner, starting with a brief study of human energy and endurance, followed by a minute analysis of operations, motions, tasks and control, and culminating in the presentation of a graphic description as advocated by Gantt.

The section following is devoted to the choice of personnel, the economic point of view regarding salary and remuneration and is concluded with a comprehensive and detailed study of plant organization.

Under the heading of "Selection of Personnel," Mr. Chevalier again reiterates the basic principle that the success of an enterprise does not rest upon the type of machine used nor upon the instruction sheet issued, but solely upon the selection of the most capable man for the task ascribed. Here he offers as an example the operations in pig-iron of the Bethlehem Steel Company done under Taylor's direction and resulting in a salary increase of 60 per cent to the laborer willing to be shown how to perform that which was suggested by his superior without incurring any more fatigue. Later, the subject of remuneration is divided into various sub-sections illustrated by comparative calculations and charts, including not only matters of cost of production to the plant, but the social condition of the laborer created and improved by the development of scientific methods compared with the economic standard of the cost of living of the past and present. In the study of plant organization based upon Taylor's work concerning the subject of plant management, Mr. Chevalier offers numerous formulae regarding time and motion studies worthy of attention. In conclusion, the writer of this well-written publication derides the preconceived idea of many industrialists that to "organize is to disorganize" and advocates the application of the theory that "if it is necessary to conceive business on a large scale, it is absolutely imperious to follow all its details to render said business safe." (Courcelle-Seneuil)

Given a reasonable length of time and serious thought combined with perseverance, observation and discrimination, together with a sound knowledge and understanding of the mind of man with his social problems will tend to bring to realization the fact that "a maximum of production in the least possible time for a maximum salary will of itself create an increase of consumption by all." It is not the machine, nor the division of operations, nor specialization and standardization, any more than chain-gang work or piece work, which will bring this ideal into being, but the combination of technical and efficient methods which should be put at the disposal of labor.

Betterment of the social condition of the laboring class would be a solution of the problems of charitable institutions which now limit themselves to the support of unfortunates in their misery for lack of better devices. To put an end to the antagonism rising between capital and labor, thereby creating class struggle, would be real progress and an instrument of social peace. By G. R. CHASSEVENT, Industrial Engineer and International Business Counsel, New York.

Labor's Search For More. By Malcolm Keir, The Ronald Press Company, New York, 1937, pages xii, 527. ($3.50.)

Getting And Earning. By Raymond T. Bye and Ralph H. Blodgett, F. S. Crofts & Co., New York, 1937, pages vii, 274. ($2.25.)

"Wise executives," says Professor Keir in his Preface, "will try to learn in advance what the majority of our people want." What they want, he concludes, is "more"—more security, more income, more leisure. His book tells the story of their search for more during the years on the other side of the Great Divide of economics, 1929. A third of the book covers familiar ground—labor unions, employers' activities, labor legislation, labor and the courts, labor in politics, the methods of industrial peace. Three chapters present a convenient summary of the great strikes of the period. Two deal with the "reds" in field and factory; two others with labor's "martyrs"—Mooney and Billings, Sacco and Vanzetti, and others. Unique in a book on labor problems are three excellent chapters on the Negro worker and on the conditions of labor in the south. Altogether the book presents the handiest available account of the historical background of present labor conflict.

It is the purpose of Professors Bye and Blodgett to point the way toward a more equitable distribution of the nation's income. The principle of equity they find in the distinction between earned and unearned income. Earned income they define as "income received in payment for some socially useful contribution to production, at a price not exceeding its normal competitive value"; income is unearned "whose recipient obtained it without producing, or in producing some injurious or undesirable thing; or if it represents more than the competitive value of whatever productive service may have been rendered." In accordance with these criteria they classify most wage and interest income as earned, find land rent, profit, high corporate salaries and income from inheritance to be largely unearned. They believe that inequality between earned incomes serves a useful economic function but they propose "that a social order shall be established in which unearned incomes will be abolished." This purpose they would accomplish through the use of the taxing power and extensive public regulation of industry.

This analysis is one with which a majority of contemporary economists would find themselves in agreement. It has frequently been presented before, notably in the writings of Thomas Nixon Carver. It is now generally recognized that the essential institutions of capitalism—freedom of enterprise, competition, private property, and private profit—are to be preserved only through the continued extension of social control. The present volume performs the useful service of presenting this analysis to the lay reader in terms which are both intelligible and interesting.

In the end both books come to the same conclusion. "If capitalism is to work at all," says Professor Keir, "it must be brought under social control. Its fruits must be distributed by one means or another—mostly high wages, high taxes, and lower prices—to the whole people not just a few favored fortunates." "True prosperity," says Professors Bye and Blodgett, "is prosperity for everyone, not for a few only. This should be the goal of national policy." With this conclusion the present reviewer is in complete agreement. By CLAIR WILCOX, Professor of Economics, Swarthmore College, Swarthmore, Pa.

Wage Determination. By John W. Riegel, Bureau of Industrial Relations, University of Michigan, Ann Arbor, Michigan, 1937, pages v, 138.

This modest publication on rate setting is the best I have seen in the field.

It is a survey of sixty companies, fifteen of which were visited by the author. The latter points out that the modern extension of motion study, jigs, special tools, conveyors, etc., to many jobs in varying degrees, has broken down much that was formerly standardized and titles of such jobs mean nothing between different companies. As a result no bare quotation of wage rate from one company is of much value in guiding another company.

All the companies are committed to the policy of paying at least the "going wage," if there is any nowadays. All select key jobs for periodic inter-company comparison and all attempt to classify their jobs on a responsibility basis relative to the key jobs. Some companies have advisory committees on wages, some report their studies to the employe representatives, and a few of the companies are inviting employe collaboration on these matters.

Conferences of the executives, one from each company, were held on many different phases of the problem and every conceivable variation seems to have been considered and summarized in the report. The discussion on minimum wages, which is given in two pages and one on joint agreements, also two pages, are excellent.

There is a chapter on job evaluation which is terse, (thirteen pages) but comprehensive. This is followed by a chapter on Occupation Analysis, and one on Valuation of Services by the Grading Method. Both are helpful. Then there are chapters on Construction of Wage Scales and Occupational Rating Plans which include case material and are constructive. Finally there are two chapters on Compensating the Individual and Social Significance which cover well the human aspects.

Although everything is brief, the material is carefully selected and well written, so that every line counts. I consider it a very worth while contribution to the solution of one of the most important problems of the day. By CHARLES W. LYTLE, Director, Industrial Co-operation, New York University, New York.

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